



RESEARCH ARTICLE

REVISÉD Tuberculosis control in postcolonial South India and Southeast Asia: Fractured sovereignties in international health, 1948-1960 [version 2; referees: 3 approved, 1 approved with reservations]

Previously titled: Tuberculosis control in postcolonial South India and beyond: Fractured sovereignties in international health, 1948-1960

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Abstract

Between 1948 and 1960, South India (Madras State) and Southeast Asia—with an emphasis on Indonesia, the Philippines, and Burma—emerged as global centres for tuberculosis control. This article attempts to situate tuberculosis control of these two regions within the broader context of transnational health. It investigates the unique ways in which tuberculosis control in South India and Southeast Asia reflected the inner tensions between the notional magic bullet approach, which focuses on specific cures to root out the cause of the disease, and a more holistic approach that relates disease prevention to overall well-being of the population. The implementation of tuberculosis control programs across South India and Southeast Asia shed light on the nature of the postcolonial state sovereignty in public health. Across India, as in Southeast Asia, the state sovereignty appertaining to the implementation of health policy was fractured, as evident in the opposition to the *Bacillus Calmette–Guérin* (BCG) vaccination. Based on a wide range of archival materials, this article situates tuberculosis control within the context of nationalist discourse and preventive medicine. In doing so, it adds not only to the historiography of tuberculosis in non-Western contexts, which has hitherto focused on India, Sri Lanka, or Africa but also to the relatively new field of Southeast Asian medical history.

Keywords

tuberculosis and international health, fractured sovereignties, BCG vaccination and controversies, South India, Indonesia, the Philippines, Burma, the 1950s

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REVISED Amendments from Version 1

I would like to thank each of the five referees individually for investing valuable time in the previous version of my article and offering several constructive suggestions. Version 2 addresses several of the referees' concerns and results in an updated article in which the main differences/additions are as follows:

Research is contextualised more firmly. I have changed the title to better reflect the scope of the paper. I have substituted the enigmatic "beyond" in the original title with "Southeast Asia" to better reflect the scope of the paper. The linkages between TB control and decolonisation in South and Southeast Asia, or for that matter colonial medicine in V.1 were tenuous. I have instead, in V.2, focused on how the campaigns against TB in each of the four countries (India, with reference to Madras state; Indonesia; Burma; and the Philippines) were inconclusive. In terms of argumentation, the updated version of the article more clearly articulates the notion of "fractured health sovereignties," an underlining theme of TB control in each of the four countries during the 1950s and how these administrative bottlenecks have impeded TB control to the present. I have incorporated additional references suggested by the referees. A salient change is expatiation of TB control in Indonesia, the Philippines and Burma so that the narrative is not lopsided in favour of India. Another conspicuous feature of V.2 is firmly placing TB control in each of the four countries discussed within the framework of regionalisation of the WHO (the birth of Southeast Asian and Western Pacific Regional Offices). The third feature of the updated version of the article is the rewriting of the conclusion so that the analysis is more nuanced.

See referee reports**Introduction**

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis*. It typically affects the lungs, but can affect other organs as well. The disease is spread in the air when people who are infected with pulmonary tuberculosis expel bacteria by coughing. TB is a major global health problem today. It is the ninth leading cause of death worldwide, and the leading cause of death due to a single infectious agent, ranking above HIV/AIDS¹. In 2016, there were an estimated 1.3 million TB deaths among HIV-negative people and 10.4 million people fell ill with the disease². The most common method for diagnosing TB remains sputum smear microscopy, in which bacteria observed in sputum samples are scrutinised under a microscope. Without treatment, death rates remain high. During the 1940s, effective drug treatments for TB, such as isoniazid and streptomycin, were developed for the first time although *M. tuberculosis* became drug resistant (defined primarily as resistance to isoniazid by 1952)³.

The ancient Indians knew pulmonary tuberculosis as *Raja Yakshma* (Sanskrit for chronic respiratory ailments), and ancient

Greeks described it as phthisis (the Greek word for waning). The *Charaka Samhita* (a Sanskrit treatise on Ayurveda or traditional Indian medicine) mentions that *Chandra* (The Moon God of the Hindu pantheon) suffered from consumption as a result of a curse pronounced by his father-in-law Daksha on account of excessive attachment to his wife Rohini⁴. Ayurvedic surgeon Susruta (6th century BCE) noted that tuberculosis was accompanied by several complications, notably chronic cough, pain in the chest and throat, fever, pain in the joints, difficulty swallowing, spitting of blood and phlegm, loss of appetite, alteration of voice, and drooping of shoulders. Ancient Indian physicians treated the disease with emetics, purgatives, and recognised the importance of a meat-based diet in restoring the bodily humours that would aid the full recovery of patients⁵.

By the nineteenth century, consumption was seen in new ways. In popular culture, the portrayal of consumptives—selected ostensibly by their youth and beauty—endowed the disease with a biting tragedy. The Romantic poets, most notably John Keats, perceived a correlation between tuberculosis, genius, and heightened sensibility⁶. In 1882, the thirty-nine-year-old German bacteriologist Robert Koch, proponent of the germ theory announced his discovery of *M. tuberculosis* as the causative agent of tuberculosis. The germ theory of disease framed sufferers of tuberculosis as a public health menace, who were confined to sanatoria, which separated infectious patients from the healthy.

In 1903, Albert Calmette, who was in-charge of the Pasteur Institute at Lille, along with French veterinarian and bacteriologist Camille Guérin, undertook research on the tubercle bacillus. In 1906, they discovered that immunity against tuberculosis is established by the presence of a living, but avirulent tubercle bacilli, in the body. Fifteen years later, in 1921, the BCG vaccine (named after Calmette and Guérin) was created. In Scandinavia, the extensive use of BCG vaccination as a preventative measure, accompanied by improvement in living and working conditions during the twentieth century, brought about the greatest decline in tuberculosis⁷.

Between 1943 and 1944, during World War II, tuberculosis ravaged Yugoslavia, Poland and other parts of Eastern Europe. In early 1945, a comprehensive effort was made by United Nations Relief and Rehabilitation Agency (UNRRA) to determine the needs of people in war-ravaged Europe. The UNRRA identified TB as a public health problem and provided emergency medical supplies to affected countries. The UNRRA's work in TB control has subsequently been continued by the World Health Organisation (WHO) since 1948. Ludwick Rajchman (who had earlier officiated as the Head of the Health Organisation of League of Nations) was very much interested that UNICEF (United Nations

¹WHO, *Global Tuberculosis Report 2017* (Geneva: WHO, 2017), 1.

²Ibid.

³Christian McMillen *Discovering TB Tuberculosis: A Global History, 1900 to the Present* (New Haven: Yale University Press, 2015), 121.

⁴P.S Chandrashekhkar, *Consumption in Madras* (Madras: Indian Association, 1914), Shelfmark M9790, Wellcome Library Closed Stores.

⁵Ibid.

⁶Helen Bynum, "Tuberculosis: An Ancient and Deadly Foe," in *Tuberculosis: A Short History*, Alexander Medcalf, Henrice Altink, Sanjoy Bhattacharya, and Monica Saavedra, eds. (Hyderabad: Orient Blackswan, 2013), 1–2.

⁷Niels Brimnes, "The Global Tuberculosis Program of the WHO," in *Tuberculosis: A Short History*, Alexander Medcalf, Henrice Altink, Sanjoy Bhattacharya, and Monica Saavedra, eds. (Hyderabad: Orient Blackswan, 2013), 19.

Children's Fund) played a pro-active role in post-World War II international health during the late 1940s⁸. There was a great deal of suspicion in WHO circles about Rajchman's intentions, especially by the USA, since he had a clearly articulated vision of socialised medicine, which advocated state intervention in public health. A major bone of contention between the WHO and the UNICEF was the use of the BCG vaccination as a prophylactic measure against TB worldwide. The WHO expressed reservations regarding the large-scale use of the BCG vaccination in anti-TB programs across the world, as the vaccine had never been used for mass immunisation across the USA, and it had a low shelf life and would deteriorate easily in a tropical climate. The French government was solidly behind Rajchman in promoting the use of BCG⁹. The large-scale use of BCG in mass vaccinations coincided with a discovery of high incidence of TB among the world's children.

In 1948, the UNICEF signed a Joint Enterprise Agreement with the WHO and Scandinavian societies, such as Danish Red Cross, Norwegian Help for Europe, and the Swedish Red Cross¹⁰. The chief objective of the Joint Enterprise of the International Tuberculosis Campaign (ITC) was to carry out BCG vaccination of children and young adults in affected countries. Mass BCG vaccination was regarded as an emergency measure to stem the occurrence of new cases of TB. The first stage of any mass vaccination against TB was the tuberculin skin test. A person who is infected with TB bacteria is expected to mount an immune response in the skin containing the bacterial proteins and would be considered a positive reactor. Only those individuals whose skin did not mount any immune response in reaction to the tuberculin skin test (non- reactors or negative reactors) would be vaccinated.

The BCG vaccine was controversial, especially in US and Great Britain¹¹. In both countries, the approach to tuberculosis was focused on educating patients to manage their own disease through the medium of the sanatorium¹². The prophylactic value of BCG was not even discussed in any Tuberculosis Association meetings in Britain prior to 1935, as controlled trials related to establishing the evidence of the vaccine's safety were lacking. Joseph

Aronson and Carroll Palmer conducted controlled trials in the US that seemed to favour BCG. The trials were conducted among North American Indians between 1935 and 1941¹³. The study group consisted of 3007 individuals between the ages of one and twenty, who were selected through random sampling based on their negative reaction to the tuberculin test. BCG vaccine was administered to 1550 individuals (experimental group) whereas 1457 served as controls¹⁴. Both groups were closely monitored for six years following vaccinations. 28 deaths were assigned to TB in the control group whereas the experimental group reported only 4 deaths¹⁵. The controlled trials indicated the relative effectiveness of BCG as a prophylactic measure against TB. Aronson became an enthusiastic supporter of BCG in the US scientific circles but was a lone voice¹⁶. A 1947 editorial in the *American Journal of Public Health* recommended BCG for populations exhibiting high incidence of the disease such as North American Indians and in areas where clinical facilities were minimal¹⁷. Even by 1950, scientists were uncertain whether it was safe to vaccinate all individuals, regardless of whether or not they had been previously infected¹⁸. Whether sensitivity to tuberculin test subsequent to BCG vaccination indicated immunity to TB? There was much uncertainty with respect to whether bovine tuberculosis contributed to TB in humans. Public misunderstandings included mistaking BCG vaccination for the tuberculin test or mistaking smallpox vaccination for BCG¹⁹. As Linda Bryder notes, the chief question with reference to BCG was its relative efficacy vis-à-vis other methods of TB control such as the use of wonder-drugs particularly isoniazid and streptomycin²⁰. Vaccinations against TB became widespread in Britain in the aftermath of World War II in the context of the Labour government's efforts to introduce greater equality in the provision of health services²¹.

Whereas the history of tuberculosis control in post-independent South India, Sri Lanka, and South Africa, and have recently received much scholarly attention, a transnational history of tuberculosis control across South and Southeast Asia, and the ways in which tuberculosis control shaped the discourse on nation-building, have thus far been largely ignored²². Likewise, stigma associated

⁸"Excerpts of an Interview of Milton Siegel with John Charnow, 7 December 1984," Doc. No. CF RAI/USAA/DB01/HS/1996-0061, UNICEF Archives.

⁹Ibid.

¹⁰UNICEF, "UNICEF Program Committee: Report on Progress of the BCG Program, 19 January 1949," Doc E/ICEF/94, *United Nations Economic and Social Council*, UN Archives.

¹¹Linda Bryder, "We Shall Not Find Salvation: BCG Vaccination in Scandinavia, Britain, and USA," *Social Science and Medicine* (1999): 1157–67.

¹²Bryder, "We Shall Not Find Salvation," 1162.

¹³Joseph Aronson and Carroll Palmer, "Experience with the BCG Vaccine in the Control of Tuberculosis among North American Indians," *Public Health Reports* no. 61 (1946): 802–20.

¹⁴Aronson and Palmer, "Experiences with the BCG Vaccine," 820.

¹⁵Ibid.

¹⁶Ibid.

¹⁷Editorial, "BCG," *American Journal of Public Health* 37, no. 3 (1947): 307–9.

¹⁸"Results of Recent International Studies on Tuberculosis," *Chronicle of the World Health Organization* 9 (1955), WHO Library (WHOL).

¹⁹"First Results of Mass Campaign with BCG," *Chronicle of the World Health Organization* 4 (1950), WHOL.

²⁰Bryder, "We Shall Not Find Salvation," 1164.

²¹Bryder, "We Shall Not Find Salvation," 1162.

²²On the international aspects of the tuberculosis campaign in South India see for example Niels Brimnes, "BCG Vaccination and WHO's Global Strategy of Tuberculosis Control, 1948–83," *Social Science and Medicine* 67 (2008): 863–73; Christian Mcmillen and Niels Brimnes, "Medical Modernisation and Medical Nationalism: Resistance to Mass Tuberculosis Vaccination in Post-Colonial India," *Comparative Studies in Society and History* 52, no.1 (2010): 180–209. For a nuanced understanding of how Sri Lanka represents an anomaly with respect to internationally-financed healthcare in South Asia, refer Margaret Jones, "Policy Control and Pathways: Tuberculosis Control in Sri Lanka, 1948–1990," *Medical History* 6, no.4 (2016): 514–33. In her article, Jones describes how Sri Lanka in the mid-1960s sought to supplant its earlier successful model of TB control of the 1950s—based on a combination of BCG vaccination, case-detection, and treatment— with a WHO-influenced community healthcare model adapted from India. The latter sought to integrate TB into routine activities of the local health centres to minimise costs but failed. Jones' article highlights the limitations encountered in grafting the WHO's model of TB control onto the existing health system already operating in Sri Lanka.

with reporting tuberculosis cases and the role of private philanthropy in tuberculosis control in the postcolonial period remains neglected²³.

Since the publication of Randall Packard's *White Plague, Black Labor: Tuberculosis and the Political Economy of Health and Disease in South Africa* in 1989²⁴, various studies have been published documenting TB control in international health contexts, the most recent being Christian McMillen's monograph *Discovering TB: A Global History*, published in 2015; and, Niels Brimnes' *Languished Hopes: Tuberculosis, the State and International Assistance in Twentieth Century India*, published in 2016²⁵. Whereas McMillen adopts a transnational approach to analyse resistance to BCG campaign in Madras on one hand, and shortcomings of tuberculosis treatment in Nairobi on the other, he fails to provide the political context (decolonisation) that affected the operationalisation of tuberculosis control in newly-independent nations during the 1950s.

In his book, Brimnes argues that the history of tuberculosis exposes two incarnations of the state in India²⁶. Whereas the colonial state was largely non-interventionist in matters of tuberculosis prevention and control, the postcolonial state—infused with nationalist rhetoric—was committed to national development based on science, technology, and economic planning. In the decade after independence—with the hope that technology could circumvent questions related to the correlation between poverty and ill health—India declared an outright war on disease. However, opposition to BCG vaccine revealed weaknesses in implementation of health policy at the state and district levels. There were considerable regional differences within India that affected local responses to tuberculosis control. Brimnes' account of tuberculosis control in India is state-centric and overlooks the role of private organisations, particularly the Tuberculosis Association of India. Likewise, his characterisation of resistance to BCG vaccination—as the tension between international intervention and national integrity—alludes to but does not elaborate the political circumstances in South India of the early 1950s, which led to the emergence of the nationalist anxiety that India had adopted a public health intervention that was of a considerably lower standard than those adopted by more developed countries²⁷.

This paper contributes to the scholarship on post-World War II international health more generally. Between 1946 and 1949, South and Southeast Asian nations declared *de facto* political independence from colonialism, starting with the Philippines in 1946. Subsequently, the process of reorganisation of health services and political conflicts (such as the partition of the South Asian subcontinent and integration of princely states into the Indian Union; the four-year Indonesian Revolutionary struggle against the Dutch, 1945–49; the Huk Balahap Rebellion, which began as a peasant insurrection in Luzon, the Philippines; the commencement of the Second Indochina War in the mid-1950s; and ethnic strife in Burma) affected the collection of vital health statistics. Therefore, this study cannot infer that the BCG campaigns across South and Southeast Asia succeeded in reducing the burden of TB. Yet, disparate archival records ranging from Government Orders of Madras State, WHO and UNICEF archives, and Indonesian and Filipino articles on TB force us to re-examine how and why the BCG campaign was implemented in South India (Madras state), and Southeast Asia (Indonesia, the Philippines, and Burma) between 1948 and 1960²⁸. This research also examines the tensions in South and Southeast Asian public health between a narrow biomedical approach that focused on the control of individual diseases and a holistic approach that linked public health with broader questions related to nation-building.

Tuberculosis and national enfeeblement: The case of India

Every attempt to single out the social determinants contributing to the incidence of tuberculosis in colonial India must inevitably focus on the everyday experiences of millions of invisible tuberculosis patients whose lives were lived inside a constellation of social conditions that made them susceptible to the disease. These conditions included poor housing, spitting in public places, eating from a common utensil, sleeping together in the same room, shutting off openings meant for light for the sake of *purdah*, and low per-capita intake of milk and meat.²⁹

By the early twentieth century, tuberculosis in India was largely urban in its distribution. According to Arthur Lankester, a Medical Missionary from the Church Missionary Society, phthisis caused more deaths in Calcutta than either cholera or plague in

²³For a rare exception see Sunil Amrith, "In Search of a Magic Bullet for Tuberculosis: South India and Beyond, 1955–65," *Social History of Medicine* 17, no. 1 (2004):113–30. Amrith's article examines social and economic factors influencing compliance of individual patients with anti-tuberculosis drugs in South India.

²⁴Randall Packard, *White Plague, Black Labor: Tuberculosis and the Political Economy of Health and Disease in South Africa* (Berkeley: University of California Press, 1989).

²⁵For the most recent study documenting TB control in international health contexts refer McMillen, *Discovering Tuberculosis*. See also Niels Brimnes, *Languished Hopes: Tuberculosis, the State and International Assistance in Twentieth Century India* (Hyderabad: Orient Blackswan, 2016), 280–81.

²⁶Brimnes, *Languished Hopes*, 280–84.

²⁷Brimnes, *Languished Hopes*, 156. At the time, the then Madras Chief Minister C. Rajagopalachari, also known as Rajaji (1952–54), a veteran nationalist leader of the Congress Party had an uncertain term in office as he faced political opposition from the Dravidian movement and its anti-Brahmin rhetoric for promoting Hindi as the national language during the 1930s. Rajaji's resistance to BCG was earlier spearheaded by A.V. Raman, a retired sanitary engineer from Madras and later the editor of *People's Health*, between 1946 and 1951. He was deeply influenced by Mahatma Gandhi's idea of rural sanitation.

²⁸With reference to postcolonial Southeast Asia, this study focuses exclusively on Indonesia, the Philippines and Burma, countries which had gained independence from colonial rule prior to 1950.

²⁹*Purdah* refers to the social practice in South Asian Hindu and Muslim households of screening women from men by means of a curtain.

1913³⁰. But, accurate statistics for deaths due to phthisis are not available for the early twentieth century as the disease was often misdiagnosed as fever³¹. The incidence of tuberculosis in Bombay, Madras and Calcutta was concentrated in the mill areas of the city, where the death rates rose to over 4 per 1000 population. The migrant population of these cities consisting of students and labourers—some of whom were infected with the disease due to cramped living conditions—would return to their native villages, spreading the disease further. Young women of Calcutta between the ages of fifteen and forty—very much confined to their home due to the *pardah* system—lacked fresh air and showed a higher susceptibility to consumption than men³².

Tuberculosis control in British India was largely due to the voluntary efforts of medical missionaries and local physicians. In 1939, concerned physicians and missionaries established the Tuberculosis Association of India with the help of private subscriptions and support from the King Emperor Anti-Tuberculosis Fund. It envisioned the prevention, control, and treatment of tuberculosis patients and undertook epidemiological investigations on subjects appertaining to tuberculosis. It is evident from the proceedings of the inaugural Tuberculosis Workers' Conference convened in New Delhi (1939) that members of the Tuberculosis Association of India approached the disease from a social perspective. At this Conference, Amulya Chandra Ukil, Bacteriologist at National Medical Institute in Calcutta presented his epidemiological investigations on tuberculosis that he had carried out in a Calcutta slum. He noted that poverty influenced tuberculosis in two ways: (a) overcrowding; and, (b) undernourishment, due to families' inability to purchase protein-rich foods, such as meat, which made undernourished people susceptible to the disease. During the 1930s, Ukil had deployed BCG vaccination to protect villagers who were seeking employment in industries and was convinced of its value as a prophylactic measure³³. However, the use of BCG as a prophylactic measure prior to 1948 was not widespread.

On 15 August 1945, six days after the conclusion of World War II, *The Antiseptic*—a monthly medical journal, with nationalist overtones published in Madras—contended that tuberculosis, leprosy, and cancer were the three most dangerous scourges that ravaged India. The war against tuberculosis was no less important or damaging than the war against militarist Japan³⁴. The article

complimented Lady Linlithgow for encouraging the establishment of anti-tuberculosis organisations and clinics on a nation-wide basis, but warned of the effect that the provincial governments were complacent in thinking that they had solved the problem of tuberculosis by allowing private philanthropies to start clinics as and when required³⁵. The Madras public were not satisfied with half-hearted measures and were agitating for the establishment of tuberculosis sanatoria in various parts of the Presidency. Tuberculosis control formed the trope of post-World War II reconstruction in British India³⁶.

In November 1946, at the dawn of Indian independence, P.V. Benjamin, the then Technical Advisor of the Tuberculosis Association of India and subsequently TB Advisor to the Government of India, addressed the Fourth Tuberculosis Workers' Conference in Delhi. In his lecture, he noted that the tuberculosis problem in India was a very vast one³⁷. A total of 500,000 people died every year due to this disease and 2.5 million individuals suffered from active tuberculosis, some of them lived in their homes and infected their relatives³⁸. At the time, India needed at least 4400 clinics to treat TB patients, whereas the actual number of clinics was only 120³⁹. As India's resources in combating tuberculosis were limited, Benjamin recommended that it was essential to train health personnel in TB work in urban conurbations.

In 1947, TB was the leading cause of mortality in Madras state. Practically one out of seven deaths in the state could be attributed to the disease⁴⁰. K. Vasudeva Rao, Honorary Secretary to the TB Association of Madras noted that as TB was a social disease, attributed to poverty and lack of awareness about treatment, an organised anti-tuberculosis campaign would go a long way in reducing the incidence of the disease. He noted that the high incidence of TB in Madras city and state was due to inadequacies of a rice-based South Indian diet which had a limited nutritional value, stunted the growth of the population, and produced a set of unhealthy people⁴¹.

In the above paragraphs, I have contextualised the emergence of TB as a social disease in colonial India, the introduction of BCG as a prophylactic measure, and the ways in which tuberculosis became a component of post-War national reconstruction. At the time, members of the Tuberculosis Association of India were divided regarding the prophylactic value of BCG.

³⁰Arthur Lankester, *Tuberculosis in India: Its Prevalence, Causation and Distribution* (Calcutta: Butterworth and Co, 1920), 46.

³¹Ibid.

³²S.K. Mullick, *Consumption in Calcutta* (Calcutta: United Press, 1918), Shelfmark Asia, Pacific, and Africa T35032(f), BLL01012507118, British Library.

³³TB Association of India, *Transactions of the Tuberculosis Workers Conference Held in New Delhi, November 1939, Under the Auspices of the Tuberculosis Association of India* (New Delhi: Tuberculosis Association of India, 1939), Shelfmark 31009, Wellcome Library Closed Stores Medical.

³⁴Editorial, "Fight the Big Three," *The Antiseptic* 42, no. 8 (1945): 457–60.

³⁵Editorial, "Fight the Big Three," 457.

³⁶Health was a provincial subject since 1919, in accordance with the Government of India Act (1919). An inadvertent consequence of transferring health to

provincial government was increased politicisation. Disease control campaigns had to operate under the constraints of politicised provincial administration with limited funding. For details, see William Summers, "Cholera and Plague in India: The Bacteriophage Inquiry of 1927–1936," *Journal of the History of Medicine and Allied Sciences* 48 (1993): 275–301, 282.

³⁷"First Things First in Tuberculosis Campaign in India: What Should be in the Program for Five Years," *Transactions of the Fourth Tuberculosis Workers' Conference Held in New Delhi* (New Delhi: The Tuberculosis Association of India, 1946), 5.

³⁸Ibid.

³⁹Ibid.

⁴⁰K. Vasudeva Rao, "Factors Influencing the Spread of Tuberculosis and Measures to be Taken to Combat the Same," *The Miscellany: Journal of the South Indian Branch of the Indian Medical Association* 14, no. 4(1947): 1–5.

⁴¹Rao, "Factors Influencing the Spread of Tuberculosis," 2.

The BCG conundrum in South India

This section contextualises widespread opposition to BCG vaccination in South India in the aftermath of Indian independence (1947). It also examines the fissured nature of the postcolonial state in implementing its own health policy. Whereas, as independent India's first Governor General, at the *Sixth Tuberculosis Workers' Conference* in Calcutta, Rajaji exhorted that physicians and Indian citizens put up a joint front against tuberculosis, four years later, as Chief Minister of Madras State, he opposed BCG vaccination⁴². In this context, Rajaji's paradoxical position with respect to tuberculosis control could be explained from a political perspective.

In November 1948, the Government of India and ITC signed an agreement that started a six-month BCG demonstration campaign—during which international BCG teams would train their local counterparts on effective TB prevention—a move that was primarily targeted at protecting schoolchildren from the disease. Interest of the local authorities in India in the BCG campaign varied from outright acceptance of the vaccine to resistance. The tuberculosis problem in India could be considered in its true perspective by regarding India as a continent and not as a country⁴³. There were regional differences within the country with regards to tuberculosis incidence and prevalence rates. In West Bengal, for instance, there was a good deal of misunderstanding regarding the role of the UNICEF, the ITC, and the WHO in the implementation of the anti-tuberculosis programme⁴⁴. The percentage of vaccinated people was miniscule. The BCG campaign in West Bengal was impeded due to opposition from private physicians who were apprehensive that the vaccination programme would interfere with their lucrative medical practice. They spread rumours among the general public that BCG vaccination was potentially dangerous⁴⁵. Unlike resistance to BCG vaccination, which largely dominated India's public health landscape in 1949, the state of Travancore and Cochin presented an anomaly. With respect to tuberculin testing and vaccination, there was enthusiasm among parents and schoolchildren alike, which was lacking in other parts of India. In Travancore and Cochin, the local press sensitised the public regarding the prophylactic value of BCG⁴⁶.

Inaugurating the BCG vaccination campaign in Madras city on 15 February 1949, the then Governor of Madras, the Maharajah

of Bhavnagar, expressed concern that even after the attainment of political independence in 1947, India had a great deal to do in raising the standard of living of the common man. One of the planks for raising standards of living was the fight against diseases, especially TB, which took a heavy toll on the population⁴⁷. He expressed guarded optimism that the scheme of BCG vaccination was one of the most useful weapons in the fight against TB⁴⁸.

The UNICEF had pledged rupees 330,000 to the Government of India for furthering preventive aspects of the campaign against TB in Madras State⁴⁹. Rajkumari Amrit Kaur, the then Union Minister of Health urged Madras Health Minister T.S.S. Rajan (a Congress veteran, deeply influenced by the ideals of Gandhi and Rajaji) to utilise UNICEF funding for undertaking prophylactic work against the disease in rural areas of the state⁵⁰. Rajan was more cautious than his colleague A.B. Shetty, who was health minister in the same government, with respect to his position on BCG vaccination⁵¹. Rajan noted that medical control and supervision was essential for rolling out the mass BCG campaign and that Madras state suffered from a severe shortage of skilled medical personnel. Rajan cautioned Benjamin (TB Advisor to the Government of India) to the effect that if any untoward incident occurred in connection with the vaccination campaign, it would jeopardise Madras public opinion towards BCG⁵². He also complained that the Madras government was trying to make both ends meet. TB control was competing with environmental sanitation and water supply for scarce financial resources. Rajan suggested that it would be more appropriate for Madras state to extend BCG vaccination, once its efficacy was empirically established⁵³.

The BCG campaign was challenged immediately by Raman. On 3 February 1949, prior to the commencement of the BCG campaign, Raman alleged that the then Health Minister of Madras State, Shetty papered over conflicting opinions of doctors, and blindly followed WHO directives to justify the launch of the BCG campaign in Madras. Shetty tried to silence critics by pointing to the success of the experimental mass vaccination against TB in Madanapalle⁵⁴. Shetty accused Raman of being a "hot gospel" on the behalf of environmental hygiene⁵⁵. Raman's opposition to BCG vaccination started from his idea of promoting environmental hygiene, a well-intentioned idea, which had created a scare in the minds of the people. Governments had to face opposition to the measures they introduced, whether it was

⁴²Tuberculosis Association of India, *Proceedings of the Sixth Tuberculosis Workers' Conference Held in Calcutta, December 1948, Under the Auspices of the Tuberculosis Association of India* (New Delhi: Tuberculosis Association of India, 1949), Shelfmark K31014, Wellcome Library Closed Stores Medical.

⁴³J.B. MacDougall, "A Survey of Tuberculosis Control Measures in Burma, Ceylon, and Certain Parts of India with Conclusions and Recommendations," 3 January 1950, Registry File DC TB SEARO, WHO Archives (WHO).

⁴⁴Ibid.

⁴⁵Ibid.

⁴⁶Ibid.

⁴⁷His Excellency The Maharajah of Bhavnagar (The Governor of Madras), "BCG Vaccination: Madras 15-2-1949," *The Miscellany: Monthly Journal of the South Indian Branch of the Indian Medical Association* 15, no.8 (1949): 2-3.

⁴⁸The Maharajah of Bhavnagar, "BCG Vaccination," 3.

⁴⁹"Letter from Rajkumari Amrit Kaur to T.S.S. Rajan," 18 September 1949, GO 1313 Health Department, M.S. Series (15 April 1950), Tamil Nadu Archives (TNA).

⁵⁰Ibid.

⁵¹McMillen, *Discovering Tuberculosis*, 272.

⁵²"Draft of Letter from T.S.S. Rajan to P.V. Benjamin on Tuberculosis Vaccination," 14 September 1949, G.O. 1313 Health Department, M.S. Series (15 April 1950), TNA.

⁵³Ibid.

⁵⁴A.V. Raman, "BCG, What About It," *People's Health* 3, no. 3 (1949).

⁵⁵A.B. Shetty, "Address Delivered by the Honourable A.B. Shetty, Minister of Public Health Government of Madras at the Inauguration of the BCG Campaign on 15 February 1949 at Madras Medical College," *The Miscellany: Monthly Journal of the South Indian Branch of the Indian Medical Association* 15, no. 8 (1949) 2-4.

Zamindari abolition, Religious Endowments Bill, or BCG vaccination⁵⁶. Shetty defended the vaccination campaign by stating that BCG vaccination was purely voluntary. As proof, conclusive for establishing the safety of the vaccine, he further referred to Transactions of the Commonwealth and Empire Tuberculosis Conference (London, 1947) and the International Congress on BCG (Paris, 1948)⁵⁷.

Raman astutely exploited disagreements among international medical experts to suggest that the vaccination against TB was still in the experimental stage. To this effect, he published the latest available results on the BCG trials⁵⁸. The February 1950 edition of *People's Health* cited a French publication *La Vie Claire* on compulsory vaccination⁵⁹. The editor of *La Vie Claire* noted that the Soviet Five Year Plan did not seek to make BCG compulsory, but attempted to study the efficacy of the vaccine vis-à-vis other techniques of combating TB. Furthermore, the article cited one French doctor Ferru, a delegate at the First BCG Congress (1948), who inferred that BCG was only an inferior vaccine incapable of guaranteeing real protection against TB⁶⁰. Furthermore, Raman launched an attack in *People's Health* on Amrit Kaur, for introducing mass vaccination in the country flippantly and irresponsibly, and against India's opposition parties for not deriving political capital out of the popular opposition to BCG⁶¹. In the March edition of *People's Health* Raman noted, "The more the facts come to light, the more we are convinced that the ulterior motive for the campaign in this country is to use the people of this country as human guineapigs."⁶²

Raman looked to M.K. Gandhi and the WHO Preamble—which defines health positively as complete physical, mental, and moral well-being and not merely as the absence of disease or infirmity—for inspiration while opposing the BCG campaign. In the January 1950 editorial of *People's Health*, commemorating Republic Day, he despaired about the health conditions of newly-independent India:

The illiterate feels; he cannot think. All he knows is a change from the Union Jack to the Tri-colour, a change from Wavell to Rajaji, the substitution of *Rajpramukhs* [governors] for Highnesses, have meant no change in his health, no improvement in his living conditions—not to mention a positive deterioration in the last two years. He is in no fettle to be ecstatic about the 26th of January this year⁶³.

By improvement of living conditions, Raman meant that the Ministry of Health fulfil minimum requirements for Indians, such as clean food, clean water, and a clean home. Raman's relentless crusade against BCG led the Madras government to postpone mass vaccinations. *People's Health* ceased publication in 1951. A year later, Rajaji became the Chief Minister of Madras State, a position that he relinquished in 1954.

During his tenure as Chief Minister, Rajaji disagreed with Nehruvian centralised planning and subsequently founded the Swatantra Party by 1959. From a political perspective, Rajaji's opposition to BCG vaccination must be seen in terms of his opposition to the centralising tendencies of Delhi⁶⁴. At the time, in order to compensate for the shortfall in public health spending in Madras state, Rajaji mobilised private philanthropy and established the *Maharaja of Bhavnagar Kshayrog* Fund (a corpus fund instituted in the name of the former Governor of Madras, to treat indigent tuberculous patients). However, the Ministry of Health at Delhi expressed reservations with respect to the Madras Health Ministry administering a special corpus fund for treating tuberculous individuals rather than strengthening existing public health institutions. In 1954, Rajaji resigned as Chief Minister of Madras, due to his controversial educational reforms. As a fiscal conservative, he sought to reconcile between reducing the cost of primary education on one hand, and increasing the enrolment of students, on the other. He advocated to the effect that children learn the vocations of their parents after school. This policy received much censure from the opposition DMK (*Dravida Munnetra Kazhagam*) party, which accused Rajaji of perpetuating the Hindu caste-based traditional occupation (also known as *kula kalvi thittam* in Tamil). At the time of his resignation as Chief Minister of Madras, Rajaji developed anti-statist views, partly as a result of his disagreements with Nehruvian Big Science, and increased state intervention into the private lives of citizens⁶⁵.

Soon after abdicating as Chief Minister, Rajaji tapped into popular resistance to the BCG campaign that had been brewing in Madras state, since A.V. Raman's articles critiquing the campaign appeared in *People's Health* between 1949 and 1950. In Tanjore and Madurai districts, a large number of people would not come out for tuberculin test and BCG vaccination⁶⁶. In his pamphlet, "BCG Vaccination: Why I Oppose It," Rajaji anchored his critique of the BCG vaccine in modern science, claiming:

⁵⁶Shetty, "Address," 3. The Zamindari system refers to a land-tenure system extant in pre-independent India.

⁵⁷Ibid.

⁵⁸Lionel Dole, "French Doctors Doubt Efficacy of BCG," *People's Health* 4, no. 4 (1950): 149–52.

⁵⁹Ibid.

⁶⁰Dole, "French Doctors," 150.

⁶¹A.V. Raman, "Editorial," *People's Health* 4, no. 4 (1950): 177–80.

⁶²A.V. Raman, "American Citizens' View on BCG," *People's Health* 4, no. 4 (1950): 248–50.

⁶³A.V. Raman, "Editorial: A Precious Child but Born in a Bad Environment," *People's Health* 4, no. 1 (1950): 134.

⁶⁴For episodes appertaining to resistance in centrally-driven vaccination campaigns, see for example Vivek Neelakantan, "Eradicating Smallpox in Indonesia: The Archipelagic Challenge," *Health and History* 12, no. 1 (2010): 61–87.

⁶⁵For a detailed understanding of Nehruvian Science refer David Arnold, "Nehruvian Science and Postcolonial India," *ISIS* 104, no. 2 (2013): 360–70, 365.

⁶⁶"Letter from the Madras Health Minister to Rajkumari Amrit Kaur," 12 July 1955, GO 3186 MS Series (12 October 1955), *Health Department*, TNA.

I am not against modern “western” therapy or modern science. BCG has nothing to do with the principles of modern western therapy. If at all, it is akin to the principles of Homoeopathy. It proceeds on a creed very similar to that of homoeopathy, namely, that diseases are to be dealt with by the administration in mild forms of things that produce identical symptoms. The difference is that the homoeopath does not introduce what multiplies in the human body, but the BCG man introduces a large body of living multiplying organisms, which are intended to remain alive in the body of the patient to produce the intended result⁶⁷.

Rajaji marshalled arguments from *The Lancet*, and various articles from the *Journal of the American Medical Association* to substantiate his argument against BCG vaccination.

Furthermore, while opposing BCG on scientific grounds, Rajaji also noted that treatment with wonder drugs like isoniazid, although in the experimental stage produced promising results, was limited⁶⁸. In his booklet, Rajaji included unverified complaints of children developing infections after the intake of the BCG vaccine⁶⁹. All the complaints were received after he initiated opposition to BCG. The range of complaints that Rajaji received ranged from blindness, skin diseases, and mental ailments. Some of the Tamil newspapers of the time, particularly *Dina Thanthi*, reflected the general uneasiness in rural areas with mass vaccinations. In the district of Cuddalore, on 14 September 1955, schoolchildren launched a strike against the BCG, as it was alleged in the local newspaper that students were coerced into accepting the vaccine by the principal⁷⁰. Rajaji’s pamphlet contained ten cases highlighting tales of children taking ill and dying, but only one case highlighted that the complications supposedly induced by BCG were due to epidemic encephalitis⁷¹. In order to assuage public fears regarding BCG, the Madras government issued a booklet entitled “Truth about BCG: Why Government has launched a Mass Campaign.” The booklet inferred from available statistics that whereas the tuberculin-tested population in the state was 15 million, only 22 people reported side-effects, due to BCG, indicating that the vaccine was harmless⁷². The vaccine used in Madras state was identical to the one used in Ceylon, Malaya, and

Burma, but no single case of complaint had been received from any of these countries⁷³.

The anti-BCG campaign in Madras state, led by Raman (between 1949 and 1950), and subsequently by Rajaji during the mid-1950s highlighted national anxieties that Indians were being used as experimental subjects by the WHO and international aid agencies. Both Raman and Rajaji adroitly exploited cleavages within the international community, regarding the efficacy of the vaccine.

Fractured postcolonial health sovereignties: TB control in postcolonial Southeast Asian contexts

Tuberculosis control in newly-independent nations of South and Southeast Asia were part of the nationalist rhetoric, which associated tuberculosis as an endemic disease, and vitiated the overall productive capacity of the population. During the 1950s, the WHO assisted the governments of Indonesia, the Philippines and Burma to control tuberculosis through a horizontally structured program that sought to integrate the control of the disease into national health services. This section critically examines the organisational shortcomings of TB control in each of these countries that relied on a combination of prophylactic measures such as vaccination of infants and susceptible population, on one hand and administration of wonder drugs such as isoniazid to treat patients, on the other.

Created in 1948 as a specialised UN agency concerned with international health, the WHO had to come to terms with the fraying of the British, Dutch, and French colonial empires in Southeast Asia and escalating Cold War tensions between the Soviet Union and the US⁷⁴. The constitution of the WHO provides for decentralisation of operational functions to the regional offices. Each Regional Office of the WHO assists in framing national health programs in the light of local needs. The WHO definition of a regional office was supposed to aggregate nations sharing similar epidemiological profiles⁷⁵.

In his address to the 79th Meeting of the American Public Health Association (1951), Chandra Mani (the first Regional Director of the SEARO from India between 1948 and 1967) noted that in Southeast Asia chronic poverty and disease had arrested

⁶⁷C. Rajagopalachari, *BCG Vaccination: Why I Oppose It* (Madras: Jupiter Press, 1955), 7, Accession No. 109290, Roja Muthiah Research Library.

⁶⁸Rajagopalachari, *BCG Vaccination*, 3.

⁶⁹“Tuberculosis Vaccination, Issue of a Booklet Truth About BCG: Why the Government has Launched a Mass Campaign,” 26 August 1955, GO 2682 M.S. Series, TNA.

⁷⁰“Tuberculosis: BCG Vaccination in Cuddalore, Alleged Complications: Press Note Issued by Government,” 15 September 1955, G.O. 3069 M.S. Series, TNA.

⁷¹Rajagopalachari, “BCG Vaccination,” 35.

⁷²“Tuberculosis Vaccination, Issue of a Booklet Truth About BCG.”

⁷³Ibid.

⁷⁴Elizabeth Fee, Marcos Cueto, and Theodore Brown, “At the Roots of the World Health Organization’s Challenges: Politics and Regionalization,” *American Journal of Public Health* 106, no. 11 (2016): 1912–17.

⁷⁵Ibid. Between 1948 and 1951, the WHO established regional offices in

the Americas (PAHO), Southeast Asia (SEARO), Europe (EURO), Eastern Mediterranean (EMRO), the Western Pacific (WPRO), and Africa (AFRO). SEARO member states at the time included India, Thailand, Indonesia, Sri Lanka, Burma, Afghanistan, and Thailand. However, owing to the partition of British India and the tensions over Kashmir, Pakistan acceded to the EMRO. Indonesia’s accession to the SEARO was complicated due to the Dutch Military Action against the Indonesian Republic in 1948. At the time, the Department of Health of the Netherlands Indies (Departmen van Gezondheid) expressed a serious reservation that the birth of the SEARO would be of little benefit to Indonesia as Batavia (Jakarta) was much closer to the proposed WPRO headquarters at Manila (that would include the Philippines, Vietnam, Cambodia, Laos, Formosa, Japan, Australia, New Zealand, and South Korea) than New Delhi (the SEARO headquarters). At the behest of Jawaharlal Nehru, the republican government (functioning from Yogyakarta) was co-opted into the SEARO, a move that aroused suspicion of the colonial authorities. Subsequent to the transfer of political sovereignty to the republicans in December 1949, Indonesia acceded to the SEARO in order to cement cooperation with India in international health. Refer Vivek Neelakantan, *Science, Public Health and Nation-Building in Soekarno-Era Indonesia* (Newcastle-upon-Tyne: Cambridge Scholars Publishing, 2017), 68.

national progress⁷⁶. TB was widespread in India and Java⁷⁷. He warned international agencies to the effect that large-scale campaigns against disease in Southeast Asia would be unsustainable, given the lack of funds and trained health personnel. During the 1950s, the SEARO concentrated on helping its member states in campaigns against malaria, TB, yaws, and betterment of maternal and child health, with an added emphasis on strengthening local health services. SEARO assisted countries of the region in the campaign against disease by training national health staff in new approaches to disease control through pilot demonstration projects⁷⁸. Likewise, between 1951 and 1955, the WPRO assisted the governments of Malaya, Brunei, Cambodia, the Philippines, Sarawak, Singapore, and Vietnam in TB control through BCG campaigns⁷⁹. Towards the close of the Sixth World Health Assembly (1953), delegates belonging to the Study Group on Tuberculosis were unanimous that BCG was a prophylactic tool in countries having a high burden of TB⁸⁰. But, a close study of articles published in *Berita Tuberculose Indonesiensis* (*Indonesian Tuberculosis Journal*) reveal scepticism within the country's medical establishment with respect to the efficacy of BCG in nationwide campaigns against the disease.

Subsequent to the transfer of political sovereignty to the Indonesian republic, the postcolonial state inherited a health system devastated by War in the Pacific (1942–45), and four years of revolutionary struggle against the Dutch (1945–49). The country was neither able to respond to disease outbreaks nor meet the demands of curative healthcare⁸¹. Indonesia suffered from a severe shortage of physicians, estimated at 1200 for a population estimated at 70 million (1949), mostly concentrated in urban areas⁸². The emergency program of the government covered the control of epidemic diseases (smallpox, plague, dysentery, and plague), and the prevention and treatment of endemic diseases (malaria, TB, venereal diseases, and leprosy). The anti-TB work was under the jurisdiction of the Tuberculosis Section of the Ministry of Health but was subsequently decentralised to provincial and local administrations. Johannes Leimena, the then Minister of Health (1947–1952 and subsequently from 1955–56) conceptualised TB clinics—that dealt with diagnosis of the disease, isolation, and nursing of the patient—as lynchpins in the campaign against the disease. But, due to financial difficulties in putting the scheme into practice, the Indonesian Ministry of Health prioritised BCG vaccination.

In 1951, L.G.J. Samallo, Director, TB Division of the Ministry of Health associated the emergence of TB with immiseration of the Indonesian masses under three-and-a-half centuries of Dutch colonialism. Consequently, in Samallo's narrative, Indonesia emerged as a hungry nation⁸³. A mobilisation mentality was evident in Samallo's assessment of the TB problem in Indonesia. He appealed to the Javanese tradition of *gotong rojong* (mutual sharing of burdens) to enlist popular support against the disease⁸⁴.

Between 1952 and 1960, tuberculosis control in postcolonial Indonesia was conceptualised as a social-hygienic and socio-medical problem. Conceptualising TB as a social-hygienic problem involved educating patients and their families about the infectiousness of the disease, training patients to scientifically dispose sputum, ration administration of prescribed medicines, especially streptomycin and isoniazid, and administer BCG vaccination to negative reactors. In contrast, as a socio-medical problem, Indonesian physicians perceived TB as a curable disease at the individual level—with the availability of wonder drugs—particularly isoniazid.

In 1952, the Indonesian Ministry of Health, in collaboration with the WHO Regional Office for Southeast Asia operated a pilot TB demonstration project in Bandung to investigate the prevalence of tuberculosis and suggest preventive measures.

In 1952, when the project was initially implemented, Bandung was facing an acute shortage of hospital beds. Consequently, the TB demonstration centre was forced to adopt ambulatory chemoprophylaxis—visiting patients' homes, educating patients and their families about the infectiousness of the disease, administering drugs, such as isoniazid and streptomycin, and providing follow-up on treatment of TB patients⁸⁵. The Bandung TB project was administered directly by the Indonesian Ministry of Health between 1952 and 1954. However by 1954, the Ministry of Health devolved administration of the project to the Inspectorate of Health of West Java. The municipal services of Bandung city were not involved in the execution of the project as they lacked sufficient funding. The project thus suffered from administrative and financial bottlenecks. Leimena attempted to integrate TB within the framework of preventive health services in the so-called Bandung Plan (1951). However, the plan had to be aborted, due

⁷⁶Chandra Mani, "International Health: Application of WHO Programs and Policies in a Region," *American Journal of Public Health*, no. 41 (1951): 1469–72.

⁷⁷Ibid. By 1951, Mani estimated that India recorded approximately 2.5 million new TB cases whereas Java and Madura recorded 750,000 cases for the same year.

⁷⁸SEARO, *Sixty Years of WHO in Southeast Asia: Highlights, 1948–2008* (New Delhi: WHO Regional Office for Southeast Asia), 76. National pilot demonstration projects in the context of tuberculosis control served as laboratories for developing countries to bridge the gap between available epidemiological knowledge derived from clinical research, on one hand and application of such knowledge to local conditions, on the other.

⁷⁹J.C. Tao, *Tuberculosis Control in the West Pacific Region, 1951–1970* (Manila: WPRO, 1972), WHO Global Digital Library, accessed 1 March 2018, <http://iris.wpro.who.int/handle/10665.1/6828>.

⁸⁰"Report of the Study Group on Tuberculosis during Technical Discussions: 6th World Health Assembly," 19 May 1953, Doc. A6/Technical Discussions/Tuberculosis/19, WHO Global Digital Library, accessed 1 March 2018, http://apps.who.int/iris/bitstream/10665/102980/1/WHA6_TD-Tuberculosis-19_eng.pdf.

⁸¹Johannes Leimena, "Ten Year Activities of the Ministry of Health," *Berita Kementerian Kesehatan* 5, no. 2 (1956): 5–12.

⁸²Neelakantan, *Science, Public Health, and Nation-Building*, 1.

⁸³L.G.J. Samallo, "Lima Tahun Usaha Pemberantasan Penyakit Tuberculose di Jogjakarta," *Berita Kementerian Kesehatan Republik Indonesia* 3, no. 5 (1956): 46–53.

⁸⁴Samallo, 51.

⁸⁵K. Osterkov Jensen, "Assignment Report on Tuberculosis Control in Indonesia," 25 April 1958, WHO Project Indonesia 8 B, Doc. SEA TB/5, SEARO Library (New Delhi: SEARO, 1958).

to a lack of finances, which consequently inhibited treatment and follow-up of individual TB patients.

Concomitant with the establishment of the TB demonstration centre in Bandung in 1952, the Ministry of Health also initiated mass BCG vaccination of infants. However, within a few months, the BCG campaign in Indonesia ran into technical trouble, as the vaccine caused fevers among newborn infants, under the age of one, causing Leimena to reassess the long-term benefit of using mass vaccinations against TB⁸⁶. At Bandung, the BCG team encountered passive resistance from the Chinese community in Indonesia, who opposed administration of the vaccine⁸⁷. In Jakarta and Bandung, complaints emerged that vaccine lots—imported from Manila, of varying potencies—administered to children induced fevers⁸⁸. In Bandung, a rumour circulated that BCG made the incipient weak⁸⁹. Subsequently, the WHO distanced itself from the BCG campaign by issuing a statement to the effect that it had advised Ministries of Health to exempt children under the age of one from vaccination⁹⁰.

The BCG campaign extended to the entire archipelago by 1956⁹¹. The campaign's performance across Indonesia was variable. The province of North Sumatra, in particular, had among the best organised BCG campaigns in Indonesia as nearly 95% of the population was covered by tuberculin surveys⁹². But, in Makassar, the capital of South Sulawesi province, the health authorities received complaints—of side-effects such as abscesses—from people who had undertaken the tuberculin test. Incidentally, the complaints coincided with a smallpox outbreak in Makassar in 1956⁹³. Due to the fear associated with tuberculin testing and vaccination, and the stigma associated with the detection and isolation of smallpox cases, locals actively resisted the BCG campaign⁹⁴.

From the archival sources, it is unclear whether the resistance to BCG in South India influenced parallel developments in Indonesia. But, given the episodes of resistance to the vaccine under disparate circumstances, as in the Indian context, one could adduce that disagreements between WHO consultants, Indonesian physicians, and the diverse ethnic groups inhabiting the

archipelago could be due to terminological and conceptual ambiguities regarding the framing of tuberculosis⁹⁵.

During the 1950s, as in the case of Indonesia, tuberculosis was the second leading cause of mortality in the Philippines, next only to malaria. In his opening address at the First Southeast Asia Medical Conference convened in Manila in 1951, Eugenio Alonso of the Philippine Medical Association declared that no want was more individualised than disease⁹⁶. The losses of income of a wage earner due to malaria or the death of a mother due to tuberculosis were individual problems that required targeted interventions⁹⁷. At the time, there was no consensus among Philippine physicians regarding the efficacy of mass BCG vaccination as a prophylactic measure against TB.

Between 1946 and 1951—in the aftermath of War in the Pacific—the US Public Health Services (USPHS) allotted US\$ 5 million for public health reconstruction in the Philippines, of which \$ 1 million was set aside for TB control⁹⁸. At the time, Leroy Young—a short-term USPHS consultant to the Philippine government—introduced mass chest radiography surveys that sought to determine the proportion of infected population⁹⁹. C. Penaflor of the Philippine Department of Health noted that the surveys were of little consequence¹⁰⁰. He was critical with respect to the inaction on the part of the Department of Health in the follow-up of the treatment of infected patients who continued to spread infections.

Even prior to War in the Pacific, BCG was used in the Philippines on a limited scale. But, Penaflor was not particularly impressed with the results of using BCG as a prophylactic and was inclined to oppose the mass program sponsored by the WHO and the UNICEF (1951)¹⁰¹. Penaflor expressed six reservations with respect to the use of BCG in mass vaccinations¹⁰². First, there was much uncertainty with respect to immunological processes triggered in the human body on account of BCG. Second, there was limited knowledge with respect to how BCG responded to standard tests in immunology. Third, why was BCG ineffective in the case of bovine TB? Fourth, whether organisms used in the vaccine were attenuated bovine bacilli? Or, were they only

⁸⁶“Pidato Pembukaan Drs. L.G.J. Samallo, Kepala Bagian Pemberantasan Penyakit Tuberculosis: Conferentie Pemberantasan Penyakit Tuberculose di Bandung,” 8–13 August 1955, *Berita Tuberculosea Indonesiansis* (Jogjakarta: Kementerian Kesehatan, 1955), 6–11.

⁸⁷C.F. Borchgrevink and Nio Kok Hien, “Report on the BCG Campaign in Indonesia,” November 1953–March 1956, Doc SEA/TB/4, *WHO Project Indonesia 8A, Project Files*, WHOA [Restricted].

⁸⁸L.G.J. Samallo, “Penilaian Hasil Hasil Vaksinasi BCG Besar Besaran di Indonesia,” In *Laporan Kongres Ilmu Pengetahuan Nasional Pertama*, vol. 1 MIPI, ed. (Jakarta: Kementerian Penerangan, 1958).

⁸⁹Ibid.

⁹⁰Ibid.

⁹¹Borchgrevink and Hien, “BCG Campaign.”

⁹²Ibid.

⁹³Neelakantan, “Eradicating Smallpox,” 71.

⁹⁴Ibid. Smallpox cases in Makassar during the 1956 outbreak were often isolated

in a leprosy ward.

⁹⁵According to the Chinese medical cosmology, diseases are cured by restoring the natural balance between the complementary opposing forces, *yin* and *yang*. The BCG vaccine disrupted the body's natural process of healing.

⁹⁶Eugenio Alonso, “44th Philippine Medical Association and the First Southeast Asia Medical Conference, Manila,” *The Philippine Medical World* (1956):n.p.

⁹⁷Ibid.

⁹⁸C. Penaflor, “The Post-World War Tuberculosis Problem in the Philippines,” *Diseases of the Chest* 26, no. 1 (1954): 52–61.

⁹⁹Ibid.

¹⁰⁰Ibid.

¹⁰¹Ibid.

¹⁰²Penaflor, “Tuberculosis Problem,” 54.

saprophytes such as Moeller's Timothy Bacillus?¹⁰³ The properties of the BCG vaccine had not been studied since Calmette and Guérin conducted their experiments. Fifth, there was no evidence with respect to the effects of administering BCG vaccine to a person who demonstrated naturally established tuberculin allergy. Sixth, whether BCG was the only method to reduce the burden of TB? The proponents of introducing mass vaccination in the Philippines, including the Department of Health used the evidence of the WHO's vaccination of 50 million children as evidence for the BCG vaccine's widespread use¹⁰⁴. Penaflo contended that the WHO's BCG campaign was implemented under disparate conditions and there was no uniformity with respect to the training of vaccinators, or the lack of uniform standards for interpreting results of the tuberculin tests. He attributed TB to poverty, malnutrition, and overcrowding. As a long-term solution to the tuberculosis problem, he prescribed a nationwide program of health education and the investment in hospital care that would facilitate the detection, isolation, and the treatment of tuberculous patients. To eliminate malnutrition, he recommended a comprehensive social security program.

Between 1948 and 1949, the Philippines became the first country in Southeast Asia to introduce freeze-dried BCG vaccine on an experimental basis¹⁰⁵. The experiment was spearheaded by Filipino physicians from the National Chest Centre, particularly Sofia Bona-De Santos. 14,898 individuals— non-reactors to the tuberculin test— were immunised with freeze-dried BCG. A follow-up tuberculin test on the vaccinated individuals after an interval of six months indicated that a little over 83% of individuals registered a vaccinal allergy, indicating immunity from TB¹⁰⁶. Based on the success of the freeze-dried BCG vaccine trial, and given the high incidence of TB among children, Filipino physicians particularly Bona-De Santos prescribed the use of BCG as a supplementary measure against the disease. Since the resources for radiography, isolation and treatment of patients, and health education were lacking, the Philippine government turned to BCG vaccination as a quick-fix solution to the TB problem. In its efforts, the government was aided by the WHO. The government steamrolled Penaflo and other critics of the BCG campaign by 1951 although scepticism towards BCG resurfaced in 1955¹⁰⁷.

In 1951, the US Public USPHS assisted the Filipino Department of Health in establishing a laboratory at Alabang for the domestic

production of BCG. The Philippines officially inaugurated its mass BCG campaign in October 1951, with financial support from the UNICEF. BCG vaccination was initiated on an experimental basis in the province of Pangasinan, in the Visayan group of islands constituting the Philippine archipelago. Public address units, supplied by the UNICEF were used by the provincial teams in Pangasinan to educate the local population regarding TB prevention. However, tuberculin testing of the population, and the administration of BCG to negative reactors, were suspended indefinitely in 1951 due to typhoons¹⁰⁸. The vaccination coverage was incomplete, as less than 50% of children under the age of six were reached¹⁰⁹.

TB control programs in the country between 1951 and 1955 primarily relied on a combination of administering BCG vaccination to tuberculin non-reactors and detecting the disease through radiography¹¹⁰. In 1955, the Philippines initiated its first pilot TB control project in the northern province of Ilocos Norte with technical assistance from the USA, on the condition that TB control would be integrated into the rural health services¹¹¹. The provincial government at Ilocos Norte provided impetus to the project. Another motivating factor was President Ramon Magsaysay's emphasis on linking TB control with extension of healthcare facilities to rural areas of the country¹¹². Physicians working in rural areas were trained to diagnose and treat TB patients. The project relied on a three-pronged approach of administering tuberculin tests and vaccinating negative reactors, detecting the disease through radiography, and treating infected individuals with isoniazid or streptomycin. BCG vaccinators collaborated with mobile chest clinics to detect TB patients. The then provincial health officer, Severo Senen enlisted the assistance of the national health staff to train rural health units in anti-tuberculosis work¹¹³. The population of Ilocos Norte enthusiastically reported at the mobile chest clinics for TB detection. The provincial government subsidised drug supply to the mobile chest clinics.

By 1957, the vaccination aspect of the TB control program in Ilocos Norte underwent a change from mass vaccination to selective vaccination of vulnerable groups, particularly schoolchildren in the 7–14 age group¹¹⁴. Between 1955 and 1958, due to effective surveillance and treatment, mortality rates attributed to TB in the province registered a precipitous decline from 178 per 100,000 deaths in 1955 to 82 in 1958¹¹⁵. But, gains in Ilocos Norte

¹⁰³Penaflo, "Tuberculosis Problem," 55.

¹⁰⁴Penaflo, "Tuberculosis Problem," 57.

¹⁰⁵F Van Deinsse, "Vaccination against Tuberculosis with Freeze-Dried BCG Vaccine," *American Journal of Public Health* 41, no. 10 (1951): 1209–14.

¹⁰⁶Sofin Bona De Santos, Francisco Dungo, and Alejandro Aaonan, "Experiences with Dry BCG Vaccine in the Philippines," *Diseases of the Chest* 19, no. 5 (1951): 544–65.

¹⁰⁷M.B. Abad and M. Elicano, "Tuberculosis among BCG'ed Children," *Journal of the Philippine Islands Medical Association* 31, no. 10 (1955): 552–60.

¹⁰⁸"Memorandum from Anton Geser to I.C. Fang WHO Regional Committee for the West Pacific (WPRO) Regional Director: Narrative Report for October 1952," File DC-TB, *WHO Registry Files*, WHOA.

¹⁰⁹Ibid.

¹¹⁰A.A. Angara and D.R. Huggins, "Report on Field Visit to Ilocos Norte, Ilocos Sur, Pangasinan, and Bulacan," 31 December 1959, Doc. WPR/PHA/FR/7, File Philippines 17, WPRO Library.

¹¹¹Vivek Neelakantan, "Disease Eradication and National Reconstruction in Indonesia and the Philippines during the Early Decades of the Cold War," *IIAS Newsletter* 71 (2015): 4–5.

¹¹²"Evaluation Report of the BCG Mass Vaccination Project in the Philippines, 1952–56," File Philippines 17, *Project Files*, WHOA.

¹¹³Angara and Huggins, "Report on Field Visit."

¹¹⁴A.A. Angara, "BCG Vaccination and Provincial Health Services: A Special Report," September 1959, *Project Files*, WHOA.

¹¹⁵Angara and Huggins, "Report on Field Visit."

registered from effective case detection were neutralised by inadequacies of drug supplies¹¹⁶. Rising costs of anti-TB medications had an adverse effect on the control program as patients were discontinuing treatment. Another setback for the Ilocos Norte project was the efficacy of the BCG vaccine itself. Many children who were BCG vaccinated were still tuberculin negative¹¹⁷. The BCG vaccinations administered in the Ilocos Norte project were of varying potencies¹¹⁸.

Between 1955 and 1960, Filipino paediatricians particularly M.B. Abad—after observing clinical manifestations of tuberculosis in vaccinated children—raised concerns with respect to safety of BCG¹¹⁹. The first case related to a female infant—aged five months and vaccinated at birth—was admitted to hospital in December 1955 with stiffness of neck. After four months of hospitalisation, she was discharged with poor vision. Subsequently, at the age of two years, she was paralysed and readmitted. She was discharged against doctors' advice and died the same day¹²⁰. The second case related to a male infant, aged nine months—vaccinated at birth—who was admitted with diarrhoea in May 1957¹²¹. At four months of age, he developed an axillary gland abscess. X-ray examination revealed calcification in the right lobe of the liver. The infant was treated with anti-TB drugs and was discharged. In the third case, a female infant aged—BCG vaccinated at birth and aged seven months—was hospitalised in August 1960 with fever, vomiting, and a bulging fontanelle¹²². She had no prior exposure to TB. The tuberculin sensitivity test recorded a negative reaction. The infant was discharged after treatment. Filipino paediatricians warned to the effect that if BCG were to have prophylactic value, it had to be administered under rigid precautions such as isolating children before and after vaccination from sources of infection.

While it was one thing to use mobile X-ray units and wonder drugs like isoniazid to treat tuberculous patients, it was yet another to follow-up on treatment. Surveillance and follow-up of treated cases was a weak branch in tuberculosis control in the Philippines throughout the 1950s¹²³. The Philippine health authorities did not have accurate prevalence studies of TB throughout the archipelago when the BCG vaccination campaign was initiated in 1951. Diagnosis for TB was based only on radiological findings and not bacteriological examinations. Patients could not follow-up on treatment, as isoniazid and streptomycin were unaffordable. In the mid-1950s, the Department of Health divested

disease control in the Philippines to the rural health units, who were already over-burdened with public health education, environmental sanitation, maternal and child health, and smallpox vaccination¹²⁴. The rural health units could not follow-up on individual cases. Between 1954 and 1958, the national mortality rate attributed to TB only registered a marginal decline from 114 per 100,000 to 104 per 100,000 individuals¹²⁵.

In 1948, subsequent to Burma's independence from Britain, the country was enmeshed in a civil war between the union government and different ethnic groups, the Karen in particular and the communists. Political unrest and consequent internal displacement of population and overcrowding in urban areas like Rangoon created poverty and predisposed the migrant population towards TB. The prevalence of TB in Burma was characteristic of other SEARO member states—with a higher pool of infectivity in urban areas¹²⁶.

In the aftermath of Burma's independence, as government functions expanded, there was an ad-hoc creation of ministries¹²⁷. The union government attempted to combine health and education under the overarching umbrella of social welfare. But, the Ministry of Social Services was rather unwieldy and by 1952, education became a separate ministry. In 1953, a new Burmese Ministry of Health and Local Government was carved out from the earlier Ministry of Social Welfare. Then, local government was split from health. Consequently, the administration of hospitals and mass vaccinations—earlier under the jurisdiction of local bodies—were placed under state control. Consequently, municipal services such as street cleaning and refuse collection in Rangoon and other big cities collapsed.

In 1952, Prime Minister U Nu introduced Burma's first welfare plan entitled *Pyidawtha* or "Happy Land."¹²⁸ The main motive of the government was to enlist the support of the Burmese citizens in its ongoing campaign against the communists. At the Pyidawtha Conference (August 1952) Nu pledged to bring to every Burmese citizen a brick house, a car, and 80 kyats in salary¹²⁹. He also pledged to work hard to make the people healthy as the legendary Burmese heroes Kyan-Siq-Thà, and Ananda Thuriya¹³⁰. The task of rehabilitation of Burma's health services during the early 1950s was complicated considering that over half of the hospitals were devastated by the civil war. Given the country's shortage of doctors (estimated at 400 doctors for 1951), the government trained health assistants to work in rural areas¹³¹. The

¹¹⁶Angara and Huggins, "Report on Field Visit."

¹¹⁷Ibid.

¹¹⁸Angara, "BCG Vaccination."

¹¹⁹M.B. Abad, N. Cortes, and L.A. Vasquez, "Further Observations on Clinical Tuberculosis among BCG'ed Filipino Children," *Journal of the Philippine Islands Medical Association* 37, no. 11 (1961): 837–43.

¹²⁰Ibid.

¹²¹Ibid.

¹²²Ibid.

¹²³Neelakantan, "Disease Eradication and National Reconstruction."

¹²⁴Ibid.

¹²⁵WPRO, "Annual Report of the Regional Director for 1961," Doc. WP/RC 12/2, *WPRO Historical Collections* (Manila: WPRO, 1961).

¹²⁶SEARO, "Third Annual Report of the Regional Director to the Regional Committee for Southeast Asia," Doc. SEA/RC4/2, *SEARO Historical Collections* (New Delhi: SEARO, 1951).

¹²⁷Hugh Tinker, *The Union of Burma: A Study of the First Years of Independence* (Oxford: Oxford University Press, 1957).

¹²⁸Tharapi Than, "The Languages of Pyidawtha and Burmese Approaches to National Development," *Southeast Asia Research* 21, no. 4 (2013): 639–54.

¹²⁹Than, "The Languages of Pyidawtha," 646.

¹³⁰Ibid.

¹³¹Tinker, *The Union of Burma*, 215–16.

Government identified malaria, venereal diseases, and TB as the main diseases afflicting the nation and enlisted international assistance to combat these diseases. Between 1950 and 1954, there were an estimated 300,000 TB patients in Burma¹³².

TB control in Burma during the 1950s consisted of a two-pronged strategy, i.e. administration of BCG to non-reactors to the tuberculin test, and institutional treatment of confirmed patients. In 1951, in conjunction with UNICEF and WHO assistance, the Burmese Ministry of Health introduced mass tuberculin testing and selective administration of the BCG vaccine to non-reactors. The institutional treatment of TB patients using wonder-drugs especially streptomycin and isoniazid within the confines of the hospital or home (domiciliary treatment) with a view to reduce infection was first implemented in Rangoon (1951) and Mandalay in 1954.

In 1951, the SEARO in collaboration with the Burmese government set up a TB Training and Demonstration Centre at Rangoon. The Rangoon Centre undertook tuberculin surveys among children in various cities of Burma to determine the incidence of TB. The surveys revealed much higher rates in urban areas to which refugees had migrated. Rangoon thus revealed 76% positive reactors in the 0–15 age group in contrast to 40% in the same age group in Mandalay¹³³. The infection rate in Rangoon was much higher in children attending schools in crowded areas. B. Papanicolaou, former WHO Senior Advisor to the Rangoon Centre, noted that between 1951 and 1952, 9265 new cases of TB were detected through fluoroscopy and mass radiography¹³⁴. Papanicolaou's study of TB in Rangoon indicated that the incidence of TB was high in malnourished individuals. Of 552 observed TB cases, only 68 had satisfactory housing and sanitation¹³⁵. In 1953, a series of disastrous fires burnt out considerable areas of Rangoon. A number of meetings were held to determine measures to prevent the spread of TB. The Rangoon Centre proposed segregation of tuberculous patients and their families in barracks. One room in the barracks would be reserved for night isolation and treatment of TB patients¹³⁶. But, the proposal to segregate the families of tuberculous individuals and their families failed as there was popular opposition to the idea. Papanicolaou commented that by the early 1950s Rangoon's population had become "tuberculosis minded," alluding to the fact that TB patients welcomed streptomycin injections due to its ability to

give symptomatic relief but disliked collapse therapy, a surgical procedure to treat TB¹³⁷. The Burmese government's attempt to enlist private practitioners from Rangoon in the TB control program was met with a poor response as they were reluctant to abandon their lucrative practice.

By mid-1952, the Burmese authorities began to take increased interest in the BCG campaign. Between August 1952 and June 1953, approximately 819,230 persons were tuberculin tested and 96,794 were vaccinated¹³⁸. Subsequently, the Burmese government incorporated BCG vaccinations into the routine activities of the rural and urban health centres¹³⁹.

In mid-1954, the SEARO assisted the Burmese government in setting up a second pilot TB control and demonstration project in Mandalay. The project emphasised TB prevention, train local personnel in modern methods in diagnosis and control of the disease, including domiciliary chemotherapy, and epidemiological surveillance of the disease. The project encountered difficulties appertaining to the recruitment of qualified Burmese medical personnel. Although the Mandalay project was successful in tracing TB patients and their contacts, scarcity of drugs particularly isoniazid hampered treatment of individual patients¹⁴⁰.

TB control in Burma was constrained by administrative and organisational setbacks. For instance, during the mid-1950s, the SEARO proposed conducting a nation-wide prevalence survey but government permission was not forthcoming. Projects sanctioned by the WHO that required funding from the Burmese government faced procedural delays¹⁴¹. The bureaucratic hassles faced by the WHO were a part of an assertion of the Burmese government in asserting its sovereignty in matters of health.

Tuberculosis treatment and prevention across Southeast Asia during the 1950s had to compete with other public health programs, such as malaria eradication, maternal and child health, and environmental sanitation. Across South and Southeast Asia during the mid-1950s, when the BCG campaigns were well-underway, there was a noticeable gulf between citizens' aspirations for freedom from disease and chronic poverty that inhibited disease control programs. In his short story "My Kampung," published in 1952, when disease eradication programs in Indonesia were

¹³²Tinker, *The Union of Burma*, 217.

¹³³SEARO, "Fifth Annual Report of the Regional Director to the Regional Committee for Southeast Asia," Doc. SEA/RC6/2, *SEARO Historical Collections* (New Delhi: SEARO, 1953).

¹³⁴Review, "Eight Months of Anti-Tuberculosis Work in Burma," *Tubercle* (1953): 28–29.

¹³⁵Ibid.

¹³⁶SEARO, "Fifth Annual Report."

¹³⁷Review, "Eight Months of Anti-Tuberculosis Work." For understanding the Burmese cosmology of disease, see also Monique Skidmore, "Contemporary Medical Pluralism in Burma," in *Dictatorship, Disorder, and Decline in*

Myanmar, Monique Skidmore and Trevor Wilson, eds., 193–209 (Canberra: ANU E-Press, 2007).

¹³⁸SEARO, "Fifth Annual Report."

¹³⁹SEARO, "Ninth Annual Report of the Regional Director to the Regional Committee for Southeast Asia," Doc. SEA/RC10/2, *SEARO Historical Collections* (New Delhi: SEARO, 1957).

¹⁴⁰SEARO, "Eighth Annual Report of the Regional Director to the Regional Committee for Southeast Asia," Doc. SEA/RC9/2, *SEARO Historical Collections* (New Delhi: SEARO, 1956).

¹⁴¹"SEARO Regional Director Meeting with Area Representatives: Summary of Minutes," Doc. SEA/AR3/2 (New Delhi: SEARO, 1955), WHOL.

underway, Toer's tones alternate between pessimism and sarcasm. He boldly declares that a "small guerrilla squad" (referring to the Indonesian revolutionaries (1945–49) are cautious and not likely to lose more than ten people in two years, but in my *Kampung* (neighbourhood), people die a "cheap death."¹⁴² He then enumerates the deaths due to preventable diseases. There is one person who dies of chronic venereal disease; the mother who kills her child with an overdose of worm medicine; and the print-setter who dies of lead poisoning, and countless victims of tuberculosis. Toer implicitly mocks the utopia of a world free of disease. Toer's short story illustrates the limitations of using disease control as a technological fix to public health problems in developing countries.

Conclusions

Having analysed the attempts to control tuberculosis across four disparate postcolonial contexts—Madras state in South India, Indonesia, the Philippines, and Burma—during the 1950s, it is inevitable to infer that the campaigns were inconclusive. But, why? The first answer that comes to mind is the lack of reliable epidemiological data regarding the incidence and prevalence of TB, in each of the four countries discussed. The second answer relates to the efficacy of the BCG vaccine. Scientists were uncertain with respect to the degree of immunity that the vaccine conferred. The third answer probably relates to the postcolonial state's faith in the proverbial magic bullet, i.e. the BCG, while overlooking the underlying causes of TB such as under-nutrition and poverty, given the paucity of financial resources. The main purpose of this article is not to blame historical agents for shortcomings in TB control. Rather, I seek to understand administrative fractures within international health and the postcolonial state in South and Southeast Asia of the 1950s which have impeded control efforts to the present.

The common denominator underlying TB control in postcolonial South India and Southeast Asia during the 1950s was the notion of fractured sovereignties. One interesting cleavage in international health was the disagreement between the WHO and the UNICEF regarding the deployment of BCG vaccination in mass campaigns. Whereas the WHO expressed uncertainty in 1948—with respect to large-scale deployment of BCG—the UNICEF advocated mass vaccinations, given the high incidence of TB among children in war-ravaged Europe. A second interesting fault line was conspicuous in the state of Madras, South India when mass vaccination against TB was introduced in 1949. Raman's articles in *People's Health* highlight the critique within educated Indian circles of using the notional magic bullet approach in TB control while papering over the underlying social causes of disease. Raman critiqued BCG as a "cheap panacea" to the TB problem,

compared to the much more interventionist approach of environmental hygiene¹⁴³. In contrast, Rajaji's opposition to the vaccine, subsequent to his resignation as Chief Minister of Madras state was linked to the centralising tendencies of Delhi. The early opposition to BCG in South India, spearheaded by Raman (1948–1951) was hardly unique. Philippine physicians, especially Penafior were equally sceptical of the government's advocacy of BCG as opposed to improving people's living standards. A third discerning fracture that impeded TB control across each of the four countries discussed in the study was administrative¹⁴⁴. Public health was a provincial subject in India, Indonesia, the Philippines, and Burma. As a result, financing particular aspects of TB control, especially administration of treatment to individual patients were delegated to provinces whereas the central government was in-charge of formulating policy directives. There was no uniform official or civilian response to policies prescribed by the central government or international agencies¹⁴⁵. The process of creating administrative consensus within the postcolonial state while implementing various aspects of TB control was complex and necessitated varying levels of central and local government involvement. This assessment is borne out by troubled expansion of TB control in each of the four countries. Apart from scepticism within India, Indonesia, and the Philippines regarding the efficacy of BCG, the prescriptions of WHO were neither universally accepted nor welcomed. In Burma for instance, the SEARO faced considerable delays in securing permission from the Ministry of Health in conducting a country-wide study assessing the prevalence of TB. Nationalist concerns related to desire for self-sufficiency partly fed Burmese reservations regarding SEARO assistance.

By the 1960s, TB no longer dominated the headlines of global newspapers because its prevalence declined across Europe and North America due to improved living standards. Consequently, the US government cut funding for TB research by the late 1960s¹⁴⁶. During the 1970s, the prevalence of TB diverged along the fault lines of the global economy, with its prevalence becoming rare in advanced countries¹⁴⁷. In 1978, with the global eradication of smallpox on the horizon and the Alma Ata Declaration on Primary Healthcare, the future for eradication of infectious diseases seemed promising. But, national governments and international aid agencies were slow to contribute resources to the ambitious Alma Ata agenda on Primary Healthcare and embraced the notion of selective primary healthcare. TB and leprosy were eliminated from the program of selective primary healthcare as these diseases were deemed too costly and time-consuming to treat. But, by the late 1980s, the HIV/AIDS pandemic in sub-Saharan Africa produced noticeable increase in TB notifications from the region. The disintegration of the USSR in 1991 was marked by socio-economic crisis and collapse of the health system which led

¹⁴²Pramoedya Ananta Toer, "My Kampung," *Indonesia* 61 (1996): 25–32.

¹⁴³Brimmes, *Languished Hopes*, 170–74.

¹⁴⁴For administrative fractures that impeded the functioning of the Ministry of Health in an Indian context, see Shirish Kavadi, "Medicine, Philanthropy and Nationhood: Tensions of Different Visions in India," in *Public Health and National Reconstruction in Post-War Asia: International Influences: Local Transformations*, Liping Bu and Ka-che Yip, eds., 132–53 (Abingdon: Routledge, 2014).

¹⁴⁵See, for example, Sanjoy Bhattacharya, *Expunging Variola: The Control and Eradication of Smallpox in India, 1947–1977* (Hyderabad: Orient Longman, 2005).

¹⁴⁶Salman Keshavjee and Paul Farmer, "Tuberculosis, Drug Resistance, and the History of Modern Medicine," *New England Journal of Medicine* 367 (2012): 931–6.

¹⁴⁷*Ibid*.

to increased incidence of TB in that part of the world. By 1993, the World Bank began to use the notion of Disability Adjusted Life Years (DALY) to measure the cost-effectiveness of health interventions. As a result of this new economic calculus, the WHO promoted short-course chemotherapy for TB, or Directly Observed Treatment Short Course (DOTS)¹⁴⁸. The DOTS subscribed to the notion of selective primary healthcare: simple to treat, inexpensive, use of smear microscopy alone to detect tuberculosis, and directly supervising treatment of individual patients. But, DOTS was not successful in detecting drug-resistant strains of tuberculosis.

According to the WHO Global TB Report (2017), five countries: India, Indonesia, China, the Philippines, and Pakistan contributed to over 50% of TB cases globally¹⁴⁹. In 2016, of the 600,000 reported cases of drug-resistant TB, 47% were from India, China, and Russia¹⁵⁰. The WHO's End TB Strategy, set for 2020, targets 35% reduction in TB deaths and a 20% reduction in TB incidence, compared with 2015 levels¹⁵¹. The principles of the End TB Strategy include patient-centred care and prevention (including testing patients for possible drug-resistance strains); bold policies (including redressing socio-economic imbalances); and intensified research and innovation¹⁵². Despite India, Indonesia, and the Philippines registering annual economic growth of over 5% in an otherwise sluggish global economy, out-of-pocket expenditures on healthcare accounted for at least 45% of total health expenditures for households¹⁵³. According to the WHO, there has been a widespread underreporting of TB cases from India and Indonesia due to poor geographical and financial access to healthcare which delays treatment¹⁵⁴. The private health sector diagnoses and treats approximately two-thirds of TB patients in India¹⁵⁵. There have been cases of private practitioners misdiagnosing TB as silicosis as the latter is compensable¹⁵⁶. Private practitioners often prescribe antibiotics to patients without the need for them to undergo the sputum test¹⁵⁷. In the absence of strict implementation laws, there are gaps in reporting TB cases treated by private practitioners in India.

In India, the Central Tuberculosis Division proposed a budget of US\$ 881 million (2012–2017) to ensure universal treatment access for TB patients under the Revised National Tuberculosis Control Program (RNTCP)¹⁵⁸. However the Central Tuberculosis Division was allocated only US\$ 680 million¹⁵⁹. There are deep-seated funding issues in the management of RNTCP. Currently, the RNTCP is under the Central Tuberculosis Division, a part of

the Ministry of Health and Family Welfare. Financial management of state-level and district-level TB control programs are devolved to the local administration. Fund flows from the central government to state or district level TB control programs can be problematic which has delayed wage payment to contractual staff employed with the RNTCP¹⁶⁰.

Since 1995, DOTS has become the cornerstone of TB control in Indonesia. The *Puskesmas* (Community Health Centres) have formed the nucleus of TB detection and treatment. In 1999, following the Asian monetary crisis (1997–98), Indonesia embarked on a program of administrative decentralisation. Beginning 2001, healthcare has been delegated to the districts, with block grants from the central government¹⁶¹. Funding for disease control have not been prioritised by local governments due to resource deficits¹⁶². Since 2000, Indonesia has received financial assistance from various international sources, particularly the Global Fund to Fight AIDS, Tuberculosis, and Malaria, USAID (United States Agency for International Development), and others to compensate the local governments' deficit spending on health. The Global Fund disbursed grants at the district level and funded the operations of the country's DOTS program. As a result of effective case finding, TB case notifications registered a steep increase from 44.5 in 2001 to 119 in 2007 and case detection increased from 30% to over 76%¹⁶³. 90% of detected cases were successfully treated. By 2006, Indonesia became the first country in the SEARO region to meet the benchmarks for TB case detection and cure. But, with the suspension of Global Fund in 2007, successes registered by the Indonesian DOTS program during first decade of the twenty-first century have been reversed due to cutbacks on health manpower and there has been a decrease in TB case finding.

As in the case of Indonesia, TB control in the Philippines is devolved to the Rural Health Units whereas the National Center for Disease Control formulates guidelines on TB control. The implementation of the DOTS program, introduced in 1997, is devolved to the Rural Health Units in the decentralised administrative set-up. According to the 2011 Philippine Department of Health estimate although the DOTS program has been successful in treating at least 91% of TB patients, the Philippine Plan to Control TB between 2010 and 2016 (PhilPACT) faces several logistical challenges¹⁶⁴. The Philippine Department of Health estimates that at least 57.2% of patients are treated by private practitioners¹⁶⁵. Since 2008—as

¹⁴⁸Ibid.

¹⁴⁹WHO, *Global Tuberculosis Report 2017* (Geneva: WHO, 2017), 1.

¹⁵⁰Ibid.

¹⁵¹WHO, *Global Tuberculosis Report*, 2.

¹⁵²WHO, *Global Tuberculosis Report*, 11.

¹⁵³WHO, *Global Tuberculosis Report*, 126.

¹⁵⁴WHO, *Global Tuberculosis Report*, 78.

¹⁵⁵EPW Editorial, "At the Brunt of Tuberculosis," *Economic and Political Weekly* LI, no. 42 (2016): 7–8.

¹⁵⁶Ibid.

¹⁵⁷Ibid.

¹⁵⁸Ranjith Babu, Karuna Sagili, Anil Jacob, and Sarabjit Chadha, "Resource Optimisation for Tuberculosis Elimination in India," *Economic and Political*

Weekly LI, no. 19 (2016): 26–27.

¹⁵⁹Ibid.

¹⁶⁰Ibid.

¹⁶¹WHO, *A Brief History of Tuberculosis Control in Indonesia* (Geneva: WHO, 2009).

¹⁶²Ibid.

¹⁶³Ibid.

¹⁶⁴Department of Health, *National Tuberculosis Control Program* (Manila: Department of Health, 2014), The Philippine Department of Health Publications Website, accessed 8 April 2018 http://www.doh.gov.ph/sites/default/files/publications/Updated_PhilPACT_2013-2016_v080715.pdf.

¹⁶⁵J.L. Portero and M. Rubio, "Private Practitioners and Tuberculosis Control in the Philippines: Strangers When They Meet?," *Tropical Medicine and International Health* 8, no. 4 (2003): 329–35.

TB was removed from the Department of Health's list of notifiable diseases—there has been a serious under-enumeration of the prevalence of TB in the Philippines. This limits the ability of the Philippine Department of Health to ensure notifications of the disease from private practitioners. Private practitioners sell anti-TB drugs over-the-counter. The high cost of anti-TB drugs may be a barrier for patients in continuing treatment. Filipino private practitioners rely on X-ray findings only and not on sputum smear microscopy in detecting TB. As a result, there is a possibility of over-diagnosis or under-diagnosis of the disease which exposes patients to inappropriate drug regimens and the risk of contracting drug-resistant TB¹⁶⁶. Stigma associated with diagnosis, misconceptions regarding TB (for e.g. the disease is spread through sharing utensils, alcoholism, or strenuous physical activity), or the perceived high cost of TB care are some of the contributory factors delaying timely detection and treatment of the disease¹⁶⁷. At least 30% of detected Multi-Drug Resistant TB (MDR) patients are unable to complete their treatment regimens due to the long duration of treatment, and adverse side-effects of medication¹⁶⁸.

Myanmar (formerly Burma) introduced DOTS as a component of the National TB program in 2003. The SEARO estimates that Myanmar has the highest incidence of TB in the region (estimated at 381 per 100,000 population in 2011)¹⁶⁹. 1.5% of the nation's population is annually affected with TB and approximately 85,000 people progress to contract the disease¹⁷⁰. Tuberculosis case fatalities in Myanmar are among the highest in the region due to high mortality among patients exhibiting HIV TB co-infection¹⁷¹. The Ministry of Health has devolved administration of the National Tuberculosis program of the country to Township Health Departments (THD) which carry out routine disease control activities, particularly detecting and treating TB cases. Although TB diagnostic services are in principle available at the THD, patients often have to travel to district-level TB centres for sputum examinations. The choice influencing TB patients' treatment

with either the General Practitioner (GP) or THD is contingent upon a variety of factors such as practitioners' ability to provide symptomatic relief, financial constraints, or accessibility of the treatment centre. Nearly three-quarters of Myanmar's TB patients initially consult with their GPs, irrespective of socio-economic status, given the latter's ability to provide individualised care and turn to the THD only for receiving the anti-TB medicines provided free-of-charge¹⁷². The largely-unregulated private sector treats the majority of TB patients in Myanmar. TB cases, even if diagnosed by GPs, are not notified in accordance with the provisions of the country's National Tuberculosis Program¹⁷³. Major constraints with respect to TB control in Myanmar include limited reach of the National Tuberculosis program in conflict-prone areas and treatment of only 2% of diagnosed MDR patients¹⁷⁴. The problem of MDR TB in Myanmar has been compounded by stock-outs of anti-TB drugs, sale of counterfeit drugs in private pharmacies, and self-treatment, or discontinuation of therapy by TB patients due to financial difficulties.

During the 1990s, many countries in South and Southeast Asia underwent a period of health reform to address issues appertaining to accessibility and efficiency. But, weak regulatory mechanisms outlining the role of private practitioners in National TB Control Programs in India, Indonesia, the Philippines, and Burma, and unclear lines of demarcation between provincial and central governments with respect to management of the DOTS program have hampered global control efforts. The global StopTB Strategy (2001–2005) sought to expand DOTS and redress challenges of HIV and MDR TB¹⁷⁵. Between 1995 and 2008, DOTS was successful in absolute numbers with respect to averting approximately 6 million TB deaths and curing 36 million patients¹⁷⁶. But, weak regulatory mechanisms governing the role of private sector participation in disease control have prevented timely reporting of detected TB cases to health authorities.

¹⁶⁶Ibid.

¹⁶⁷Department of Health, *National Tuberculosis Control Program*. For a nuanced understanding of tuberculosis-associated stigma in the Philippines, see Filomeno Aguilar Jr., "Targeting Tuberculars: Social Stigma and Public Health Campaigns," *Philippine Studies* 57, no.2 (2009): 293–306. In Philippine popular culture, the aetiology of tuberculosis is not well-understood. Filipinos think of TB in terms of predisposing factors such as lack of food, overwork and exposure to the elements, especially letting sweat dry on one's back, which weaken the body and disrupt the hot-cold balance. Heredity is perceived as an important factor (for e.g. TB is transmitted through the blood of one's parents). Given these contradictory perceptions, a tuberculosis patient ("tubercular") is seen as personally responsible for contracting the disease and is stigmatised. Under the weight of stigma, patients enrolled for DOTS treatment and their immediate family members will conceal the disease, risking the transmission of TB to contacts. Case statistics in official DOTS reports do not capture missing TB patients.

¹⁶⁸Department of Health, *Joint Tuberculosis Program Review: Philippines, 2013* (Manila: Department of Health, 2014).

¹⁶⁹SEARO, *Tuberculosis Control in the South-East Asia Region: Annual TB Report 2013* (New Delhi: SEARO, 2013), SEARO Website, accessed

9 April 2018, http://www.searo.who.int/tb/annual_tb_report_2013.pdf.

¹⁷⁰Saw Saw *et al.*, "Public and/or Private Healthcare: Tuberculosis Patients' Perspective in Myanmar," *Health Research Policy and Systems* 19, no.7 (2009), <https://doi.org/10.1186/1478-4505-7-19>.

¹⁷¹SEARO, *Tuberculosis Control*.

¹⁷²Ibid.

¹⁷³For details refer Knut Lönnroth *et al.*, "Social Franchising of TB Care through Private GPs in Myanmar: An Assessment of Treatment Results, Access, Equity, and Financial Protection," *Health Policy and Planning* 22 (2007): 156–66.

¹⁷⁴WHO Country Office for Myanmar, "Multidrug-Resistant Tuberculosis in Myanmar: Programs Plans and Challenges: Factsheet," SEARO Media Centre Website, accessed 10 April 2018, http://www.searo.who.int/myanmar/mediacentre/MDT-TB_Factsheet.pdf.

¹⁷⁵Rifat Atun, Diana Weil, Mao Tan Eang, and David Mwakyusa, "Health-System Strengthening and Tuberculosis Control," *The Lancet* 375, no. 9732 (2010): 2169–78.

¹⁷⁶Ibid.

This study reveals the benefits of linking the history of tuberculosis in Southern India and Southeast Asia to the underlying tensions in international health of the 1950s between a holistic approach that correlated disease to poverty and a narrow technocentric approach that focused on targeted interventions such as vaccinations. At the time, in each of the countries discussed in the study, there was a growing awareness of the general public with respect to the economic and social underpinnings of TB. Yet, governments turned to magic bullets in the hope that they could paper over underlying socio-economic causes of ill health. If I were to pick a dominant theme from the paper, it would be one about how the discovery of wonder drugs and BCG, concomitant with the independence of India, Indonesia, the Philippines and Burma ignited new hopes for TB control by 1950. Yet, these hopes have continued to elude planners from the 1950s to the present day due to a dualism between health policy formulation at the centre and implementation at the level of local governments. These dualisms have made it difficult for TB control to be integrated within the overall framework of public health activities of the postcolonial state.

Data availability

All data underlying the results are available as part of the article and no additional source data are required.

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No competing interests were disclosed.

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I am pleased by the way the author has addressed my comments and those of the other reviewers. I believe it is a much stronger but more balanced paper. I am happy for the status to be changed to approved and wish the author well.

Competing Interests: No competing interests were disclosed.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

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I am pleased with the revisions. The author's attention to my concerns, as well as the other reviewers' queries, is laudable. I think the status of the paper should be amended to approved.

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Liping Bu

Department of History, Alma College, Alma, MI, USA

I think Neelakantan V. has well addressed the issues regarding his version. The article is now good for publication.

Competing Interests: No competing interests were disclosed.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

Referee Report 13 February 2017

doi:[10.21956/wellcomeopenres.11362.r19309](https://doi.org/10.21956/wellcomeopenres.11362.r19309)



George Dehner

Department of History, Wichita State University, Wichita, KS, USA

In this article the author sketches out an ambitious, and I agree, important thesis on post-World War II tuberculosis (TB) control and more broadly international health in South and Southeast Asia. Transnational discussion of health programs related to TB control have thus far generally overlooked the political aspects of decolonization in their reviews making this study a welcome addition to the literature on international health. Regrettably, the author is not completely successful in achieving this stated goal.

The author sets out a difficult task: namely, to examine tuberculosis control and the *Bacillus Calmette-Guerin* (BCG) vaccination programs in India, Burma, Indonesia, and the Philippines. The colonial experience of these states, under the control of the British, Dutch and the United States respectively, differ as does their experiences during the Second World War and their painful and chaotic national births. These states may share common experiences in public health under the colonial regimes and in their early national periods, but the author must do more to highlight these commonalities and not just assume them.

Further complicating the author's self-assigned task is that the vehicle for examining tuberculosis control in these new nations is the UNICEF-funded and WHO-led BCG inoculation programs. The author rightly points out that in this post-war period the WHO emphasized bio-medical technical approaches to disease threats. US financing and diplomatic muscle greatly shaped international health tactics in the 1950s and 1960s and this technical approach mirrored US solutions to public health problems. Narrow-focused technical programs stood in contrast to more holistic frameworks that marked some pre-war League of Nations Health Organization programs and that re-emerged in international health debates at the WHO-sponsored Alma-Ata conference in 1978. But the BCG example is problematic because US public health officials—British health officials as well—were highly skeptical about the vaccine's effectiveness. While some US health officials were willing to concede that BCG might be effective in protecting children in places where TB was rampant, the major support for the program came from Scandinavian states. Therefore, a discussion of the contested nature of the BCG vaccine would be appropriate in the background section portion of the introduction.

The author asserts that health programs were a component of nation-building; a point admirably demonstrated in the India discussion. However, this high standard is not maintained in the examples from the other states of South and Southeast Asia that comprise this study. For example, it would be useful for the author's argument to know more about the motivations for the 1956 pilot TB program in the Philippines (8). Who were the driving forces in initiating this program—the Filipino government or the United States?

Did the WHO have a role? Also, it is not clear from this summary if the program revolved around a BCG distribution system or was there some other model that was being pursued? In similar fashion, it is pertinent to know if the bureaucratic hassles faced by the WHO survey of TB in Burma were part of an assertion of Burmese government independence in matters of health or the result of disputes between central and local authorities (9). Fuller accounts and discussions of these cases would help to bolster the author's argument.

The article as written has much to commend it. The section on India is the most fully developed and the one most completely supportive of the author's conclusions. Expanding the political aspects of TB control, clarifying the unifying elements in their nationalist formation, and tightening up the transitions between sections will go a long way in making this article more effective. In the conclusion, the author states that "resistance to vaccination in postcolonial contexts stems from the association of the vaccine with the colonial state's interventionist ambitions ..." and that there existed a "dualism between health policy formulation at the centre and implementation at the level of local governments" (9-10). These are intriguing assertions, but the article needs to do more to provide evidence that these conclusions are true for nations in the region beyond India.

Competing Interests: No competing interests were disclosed.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 11 Apr 2018

Vivek Neelakantan, IIT MADRAS, India

George Dehner, Comment 1: The BCG example is problematic because US public health officials, British officials as well, were highly sceptical regarding the vaccine's effectiveness. Elaboration of the contested nature of the BCG vaccine would be appropriate.

Response: Contested nature of the BCG vaccine expatiated on page 5, V. 2, in a separate paragraph.

George Dehner, Comment 2: "The author asserts that health programs became a component of nation-building; a point admirably demonstrated in the India discussion. However this high standard is not maintained in the examples of other states of South and Southeast Asia that comprise this study. For example, it would be useful to know more about the motivations of the 1956 pilot TB program in the Philippines:

Who were the driving forces, the WHO or the US?

Did the WHO have a role? It is not clear whether the program revolved around a BCG distribution system or was there some other system being pursued? In a similar fashion it is pertinent to know if the bureaucratic hassles faced by the WHO survey of TB in Burma were part of an assertion of Burmese government independence in matters of health or the result of disputes between central and local authorities? Fuller account of the case studies would help bolster the author's arguments."

Responses: I have expatiated on the Philippines' case study so that the narrative is not gravitated towards India. The pilot project in Ilocos Norte was implemented with technical assistance from the

US. It did not exclusively on administering BCG vaccinations but relied on a three-pronged strategy, i.e. (a) administering tuberculin tests and vaccinating the detected negative reactors to the tuberculin test, (b) detecting the disease through radiography and (c) treating the infected individuals with isoniazid or streptomycin.

In the case of Burma, the bureaucratic hassles faced by SEARO officials in getting the tuberculosis prevalence survey sanctioned was a part of the Burmese government's attempts to assert its sovereignty in health matters. This was a very helpful suggestion and I have incorporated it while narrating the Burmese experience of TB control during the 1950s.

Additionally, in the case of Indonesia, I have also added on how TB shaped nationalist imagination and the consequent mobilisation mentality. For Burma, I have expatiated on how U Nu's Pyidawtha ideology shaped the Burmese approach to disease. In the Philippines, the nationalist rhetoric was less explicit although there was an added emphasis on the economic aspects of TB. I have also added a fresh account with respect to the inner tensions between magic bullet approach and a more holistic approach that linked health with nation building. Examples provided not only from India (original version) but also from Indonesia, and the Philippines. In the case of Burma, most of the inner tensions in public health could be teased out from a fuller use of *SEARO Regional Director's Annual Reports* rather than the voice of local physicians.

George Dehner, Comment 3: Expanding on the political aspects of TB control, and clarifying the unifying elements in their nationalist formation and tightening up the transitions between sections will go a long way in making the article more effective.

Response: I have rewritten the conclusion. The underlining unifying feature of TB control in India and Southeast Asia (the three examples provided) is the notion of fractured sovereignties. I have spelt out the administrative fractures in great detail in the conclusion and to shore up the argument, have provided briefly how administrative fractures have impeded TB control to this day, with reference to WHO End TB strategy. I have also smoothed the transitions between sections so that the narrative is cohesive.

Competing Interests: Nil

Referee Report 09 February 2017

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Susan Heydon

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Tuberculosis remains a global health problem with many challenges facing its control, both related to the disease and the wider context. While increasing scholarship now exists about tuberculosis control in many parts of the world in countries post-independence, this paper aims to add a new approach offering a transnational history of tuberculosis control across South and Southeast Asia. Other themes relate to stigma and private philanthropy. The author discusses anti-tuberculosis campaigns in India, Indonesia, the Philippines, and Burma between 1948 and 1960, particularly exploring their links with discourse about nation building. The very different case studies in this paper pinpoint the limits of national and international public health interventions; they also highlight the importance of the local context in an age post Second World War of enthusiasm for the possibilities of international public health policies and programmes and

reliance on technology. In so doing we are reminded of the need to look beyond a narrow biomedical approach to public health problems. Tuberculosis is the issue in this paper, but the point is relevant more broadly.

Considerable research has been undertaken using a wide range of archival sources and a transnational approach has the potential to offer valuable insights. My reservation is not with the research and the overall argument, but with the way it has been presented. Currently, I find the paper disjointed as it reads as a series of separate examples beginning with India and then moving to Southeast Asia. The balance of the content is also weighted towards India and this I find lessens the impact of the other three and also interesting case studies. Should the title include 'Southeast Asia' rather than the more enigmatic 'beyond'?

Transnational as a term has different understandings and I note that the abstract does not mention 'transnational', although the paper does. I think, however, that such an approach looking across borders could be useful in pulling the paper together. International public health operated within a world of nation states. The Philippines is a member of the Western Pacific region the other three are in the South-East Asia region. Could something be said more broadly about the fluid regional WHO environment at this time and nation building discourse?

Lastly, a comment on a point made in the conclusion – rather than governments being 'forced', the use of 'magic bullets' (technology) was often easier and for many preferred; it also avoided having to deal with harder underlying social and economic issues.

Some specific points:

1. TB is the leading cause of death worldwide from *infectious disease* – not overall.
2. Some of the sentences are much too long – for example on page 3 ending with footnote 15.

Competing Interests: No competing interests were disclosed.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 11 Apr 2018

Vivek Neelakantan, IIT MADRAS, India

Susan Heydon, Comment 1: "The paper is disjointed and reads as a series of separate examples beginning with India and then moving to Southeast Asia. The balance of the paper is weighted towards India and this I find, lessens the impact of the other three and also interesting case studies. Should the title include "Southeast Asia" rather than the more enigmatic beyond?"

Response: I have substituted the more ambiguous "beyond" with Southeast Asia in the title to better reflect on the scope of the paper. I have also expatiated TB control in Indonesia, the Philippines and Burma so that the narrative is not biased towards India. I have also tightened transitions between paragraphs to improve the flow of the narrative.

Susan Heydon, Comment 2: "Transnational, as a term has different understandings. I note that the abstract does not mention 'transnational' but the paper does. I think that such an approach looking across borders could pull the paper together. The Philippines is a member in the West

Pacific region, the other three in the Southeast Asia region. Could something be said about fluid regional WHO environment at this time and nation-building discourse?

Response: I have emphasised “transnational” in the abstract of the paper to spell-out the scope of the paper. I have emphasised the birth of the SEARO and WPRO (WHO Regional Offices of Southeast Asia and West Pacific) to emphasise how the WHO, in the 1950s, supported disease eradication programs through pilot health demonstration projects (in this case TB). The regionalisation of the WHO has provided better context to the narration of TB Control projects in Indonesia, the Philippines, and Burma. I have spelt out the framing of TB in nationalist imagination in Indonesia (L.G.J. Samallo’s interpretation) and Burma (*Pyidawtha*). Although data for the Philippines is not available, I have spelt out the rhetoric around TB in the Philippines at the time, framed in terms of poverty.

Susan Heydon, Comment 3: Rather than being forced, the use of magic bullets was often easier.

Response: I have co-opted the reviewer’s comment in the conclusion.

Susan Heydon, Comment 4 (a) TB is the leading cause of death worldwide, not overall.

Response: I have co-opted the suggestion. The statement has been revised in accordance with the latest WHO statistics on TB (2017).

Susan Heydon, Comment 4 (b) V.1. Some sentences are too long, for e.g. page 3, footnote 15
Response: I have split the sentences for clarity. For purposes of smooth flow of narrative, I have split the long-winding sentences into simpler sentences for enhancing the clarity of the paper. Page 3, footnote 15 of V. 1. The introduction of Rajaji and A.V. Raman moved to the footnote for improving flow of the main text. Page 6, of V2.

Competing Interests: Nil

Referee Report 06 February 2017

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Liping Bu¹, Shirish N. Kavadi²

¹ Department of History, Alma College, Alma, MI, USA

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The study of tuberculosis control is usually conducted about the efforts of individual countries to evaluate the outcome and draw lessons. In this article, Vivek Neelakantan tries to break the boundaries of individual nations to draw out certain patterns of TB control campaigns in four different countries of South and Southeast Asia, namely India, Indonesia, the Philippines, and Burma. The focus of analysis is on the politics of anti-BCG vaccination in South India, Madras state to be more precise, where local politicians spread and exploited popular fear of the side-effect of the vaccine for their own political agenda to counter the central control of the government in New Delhi. Private physicians were another major group of power who opposed the vaccination campaign, as they were concerned that the BCG vaccination would reduce their lucrative medical practice. The major proponents for the BCG vaccination were the national governments and international organizations such as WHO, UNICEF and ITC. These actors regarded the

TB control, and disease prevention in general, as an integral part of nation-building and improvement of human lives. In his study, Neelakantan finds that there were various tensions existing between the local implementation and the central planning. There were also tensions between the narrow biomedical approach that targeted one individual disease such as TB that was promoted by international organizations and the holistic approach that targeted diseases with broader commitment to socioeconomic improvement in nation-building by post-colonial governments.

The author states that his study situates TB control within the broader context of international health, but the article does not provide a clear picture of international health in either the South Asia/Southeast Asia region or even broader context. A specific discussion of the context of international health will also help to clarify how implementation of TB control in South Asia/Southeast Asia sheds light on the nature of post-colonial state sovereignty in public health. The author asserts that by discussing TB campaigns in the four countries the article links their political history of decolonization to the history of international health. This part of the article is weak since the political history of decolonization in these countries has not been discussed. In this regard, an examination of the nationalist discourse in the four countries and the local states of India on preventive medicine and TB control will help readers understand the politics of public health and nation-building in that region. In doing so, the author may want to re-define the title of the article to better reflect the content.

In the discussion of regional differences within India (p. 5), it would help if the author explained, if data available, the differences in incidence and prevalence rates in West Bengal and Travancore and Cochin (present day Kerala) and how people viewed TB before writing about the different responses to the BCG vaccination campaign. Incidentally, Bengal and Travancore also have rice based diets. Did similar perceptions exist in these two provinces with respect to prevalence rates and diet? In terms of people's view and understanding of disease and prevention, it is helpful to provide a brief historical account of public health in these different regions. Kerala today is viewed as a model with respect to public health in India mainly due to its unique modern history. Travancore was a Princely State and not part of British India. The Rockefeller Foundation was deeply involved in developing public health programs and the public health department in that state.

As to the change of Rajaji's stand after he took over as Chief Minister of Madras state, it is not clear whether the change was a result of Raman's campaign of popular sentiment or of Rajaji's opposition to Delhi's centralizing tendencies or a combination of both. A further clarification or elaboration would help. Were the nationalist anxieties that Raman and Rajaji had about Indians being used as experimental subjects shared by others in India either in official and non-official circles and by professionals and non-professionals? A broader Indian context will help explain the question. Kavadi's "Medicine, Philanthropy, and Nationhood" in *Public Health and National Reconstruction in Post-War Asia* (Bu and Yip, 2015) would enrich the argument.

The "fractured sovereignties", as Neelakantan terms them, were, in fact, of many different natures. Some were political fights between the local and the central governments, some were inadequacies of administrative capability and deficiency of supplies, and others were tensions in the negotiation of sovereignty over disease control between international demands and national necessities. For instance, in Madras it appeared more political, with Raman and Rajaji each promoting their own agenda; whereas in Burma and the Philippines the fractures were located within the bureaucracy or associated with technical difficulties. The author needs a bit more analysis of the fractures in health policy implementation and post-colonial health sovereignties. The idea of 'fractures' has been discussed by other scholars with reference to various levels, entities, actors in the political and administrative structure and system, namely, Bhattacharya, Harrison and Worboys (2005), Sanjoy Bhattacharya (2006), Ryan Johnson and

Amna Khalid (2011), and Kavadi (2015 & 2016).

The author could have gone into a bit more details to discuss Indonesia, the Philippines and Burma. It would be useful to know how different national governments handled the dissemination of knowledge about disease and the TB control. In other words, did the governments do a good job in popular education about TB and its prevention and treatment? One also wishes that the author elaborated more on whether the South India opposition to BCG vaccine stood out as a unique case or a representative example of anti-TB campaigns in India in general. It may be useful to look at Margaret Jones' article (2016) on TB control in Sri Lanka during 1948-1990, which was not about BCG but a community-oriented control model that also faced obstacles and resistance in implementation.

Competing Interests: No competing interests were disclosed.

We have read this submission. We believe that we have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however we have significant reservations, as outlined above.

Author Response 11 Apr 2018

Vivek Neelakantan, IIT MADRAS, India

Liping Bu and Shirish Kavadi, Comment 1: The article does not provide a clear picture of international health in either South or Southeast Asia. A specific discussion on international health will also clarify how TB control in Southeast Asia sheds light on the nature of postcolonial sovereignty.

Response: I have contextualised the pilot TB control projects in each of the countries within the framework for the emergence of the WHO and establishment of its regional offices in New Delhi and Manila. I have also eliminated the tenuous link between decolonisation and TB control, given the lack of data and have instead reshaped the argument in favour of fractured sovereignties, a recurring theme in all four countries and how these administrative fractures have undermined TB control to the present day (a point illustrated in the conclusion).

Liping Bu and Shirish Kavadi, Comment 2: Change of Rajaji's strategy towards BCG after he took over as Chief Minister?

Response: The context was political. He opposed the centralising tendencies of Delhi. Domestically, his educational reforms were controversial as his opponents denounced him for promoting *kula kalvi thittam*, or caste-based hereditary occupation through his educational strategy. As Niels Brimnes pointed out, Rajaji did not have an alternative to state-medicine (BCG) unlike his friend A.V. Raman, the editor of *People's Health*.

Liping Bu and Shirish Kavadi, Comment 3: "Fractured Sovereignties as Vivek Neelakantan points out, were in fact of many different natures."

Responses: A helpful observation and I have underlined the fractures as the key theme in the conclusion of V. 2 of the article. Fractured sovereignties in Madras were more political. While discussing Madras, I have highlighted the fight within Madras itself between competing priorities of the state government, in a separate paragraph dedicated to T.S.S. Rajan, Minister of Health of Madras, and a colleague of the Minister of Health A.B. Shetty.

I have expatiated the argument on the notion of fractured sovereignties in the conclusion. The recommending readings Sanjoy Bhattacharya's *Expunging Variola*, and Shirish Kavadi's chapter published in Liping Bu and Ka-Che Yip's edited volume were very helpful for strengthening the argument. I did not consult *Fractured States*, as I have deleted the tenuous assertion earlier made between decolonisation and TB control. Margaret Jones' article is helpful to understand the shortcomings of WHO-sponsored anti-TB campaign in Sri Lanka grafted onto the extant health system. I have incorporated Margaret Jones' analysis in the paragraphs focusing on extant historiography. In the conclusion, I have clarified that the South Indian opposition to BCG, spearheaded by A.V. Raman was hardly unique in the history of BCG campaigns across Asia. In the Philippines, similar issues were raised with respect to the vaccine's efficacy. But, the opposition to BCG was steamrolled only to resurface by the mid-1950s when Filipino paediatricians reported complications, a point also shared by India and Indonesia.

Liping Bu and Shirish Kavadi, Comment 4: "In discussion of regional differences within India, it would help if the author explained, if data available, the differences in incidence and prevalence rates in West Bengal and Cochin (present-day Kerala) and how people viewed TB before writing about the different responses to the BCG vaccination campaign?"

Responses: Unfortunately, data for incidence and prevalence rates for TB in Bengal and Cochin, for the early 1950s is not available. I have also seriously taken into account the observation of Shirish Kavadi that the Rockefeller Foundation's work in Travancore was instrumental in shaping the favourable public opinion of the local press in Travancore and Cochin states after Indian independence, towards BCG. While this is true, the Rockefeller Foundation did not concentrate on TB control in India during the 1950s (the focus was on the Caribbean, instead). For e.g. Henrice Altink's article in *Medical History*. Therefore I have not mentioned the Rockefeller Foundation's role in shaping public opinion in Cochin and Travancore towards BCG, for the early-1950s. Given the vastness of India, comparable to a "continent," and not a country, in the view of a WHO technical report, I found it feasible to concentrate on one part of India, i.e. Madras state for which I had locally-available archival materials.

Competing Interests: Nil

Referee Report 03 February 2017

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Christian W. McMillen

Cocoran Department of History, University of Virginia, Charlottesville, VA, USA

Let me note from the outset that the author's research project and the questions he is asking combined with the sources he is interrogating—such as the Indonesian language primary documents I doubt many others have ever examined—have the potential to broaden historians' understanding of the post-World War II global health landscape. For the author is doing research on areas largely ignored by others; he is asking vital questions of critical importance to many scholars working in the field.

The present article—well conceived, though not always well executed—attempts to link the history of anti-tuberculosis campaigns in India, Burma, Indonesia, and the Philippines. The author has set for

himself an ambitious agenda that is partially fulfilled. While I admire the effort to connect the history of TB control in these four countries as a way to make an argument about decolonization in the post-World War II era the author will need to do more work to make his claims less subject to criticism. To my mind there are too many unsubstantiated arguments. The author's principle argument is that "Resistance to vaccination in postcolonial contexts stems from the association of the vaccine with the colonial state's interventionist ambitions and nationalist critique of health policies of the colonial government." However, the argument is well substantiated only for India where a significant anti-BCG vaccination campaign stymied progress in the south. In Indonesia, on the other hand, while the author makes clear that the BCG campaign faced barriers from the start—"organisational shortcomings of the TB control programme"; "passive resistance from the Chinese community"; and complaints that BCG caused fevers—it is not clear that any of this had anything to do with resistance to the colonial or postcolonial state. The connections in the Philippines and Burma are even more tenuous. In Burma, the author notes, there was a high defaulter rate at the Rangoon TB clinic. Why is this not explored. The reader is left to assume that the details regarding the high defaulter rate are offered in support of the author's overall claims about resistance to the colonial and post-colonial state. But I don't see the connection.

As noted above, in the conclusion the author writes: "Resistance to vaccination in postcolonial contexts stems from the association of the vaccine with the colonial state's interventionist ambitions and nationalist critique of health policies of the colonial government." This is a provocative and compelling hypothesis and one that the author soundly argues was the case in South India. But the examples from Indonesia, Burma, and the Philippines do not support it. This does not make the claim incorrect; it does point to the need for the author to shore up the claims. This could be done in a longer piece or one of similar length that does not give such lopsided coverage to India—the section on India is longer on its own than the section covering the other three countries. Further on in the conclusion the author writes, "This study reveals the benefits of linking the history of tuberculosis in Southern India and Southeast Asia to the broader question of decolonisation in the aftermath of World War II." I would agree that benefit could come from linking the history of TB to the history of decolonization. I am thus eager to see how the author will make that connection less tenuous in future publications.

Competing Interests: No competing interests were disclosed.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 11 Apr 2018

Vivek Neelakantan, IIT MADRAS, India

Christian McMillen, Comment 1: To my mind, there are too many unsubstantiated arguments. The author's principle argument is that resistance to vaccination stems from the association of the vaccine with the colonial state's interventionist ambitions and nationalist critique of health policies of the colonial government."

Response: I have deleted the unsubstantiated claim as historiography/ primary sources were deficient for Burma (Myanmar). The scope of the paper is limited to TB control in the first decades of independence. The contention about decolonisation and TB control was also tenuous due to the primary sources skewed in favour of India. Instead of focusing on the tenuous linkages between decolonisation and TB control, I have revised the argument. I have expatiated on the notion of fractured sovereignties, an underlining theme impeding TB control in India and Southeast Asia.

Fractured sovereignties existed at different levels, a point I have highlighted in the conclusion. I have also highlighted how administrative fractures in public health have affected the WHO's End TB Strategy towards the end of the paper.

Christian McMillen, Comment 2: The author notes that the BCG campaign faced organisational barriers from the start. For e.g. passive resistance of the Chinese community, complaints that the BCG vaccine had caused fevers. But, this had nothing to do with the resistance to the postcolonial state. Examples from Indonesia, Burma, and Philippines, do not support it.

Response: I agree with your comment. Given the bias of secondary literature towards India, I had to rewrite the argument in favour of administrative fractures. I have expatiated on the BCG campaigns in Philippines and reservations of local physicians, the way the government steamrolled on opposition toward BCG (early 1950s), and the recrudescence of opposition, led by Filipino paediatricians towards the mid-1950s when it was alleged that vaccination led to the death of infants. I have rewritten entire paragraphs on Burma so that the scope of the paper is tightened to reflect on the time-frame between 1948 and 1960, when U Nu's Pyidawtha ideology reigned influential and shaped the political culture of health. I have deleted the references to high rate of default at the TB clinic in Rangoon (1964) as it falls beyond the scope of the article. I have instead, focused on administrative fractures that had a decisive influence on the momentum of the anti-TB campaign in Burma.

Christian McMillen, Comment 3: "This study reveals the benefits of linking the history of TB control in South India and Southeast Asia to the history of decolonisation. I am thus eager to see how the author will make that connection less tenuous in future publications?"

I have deleted the tenuous claim due to lack of adequate archival sources for countries in Southeast Asia. Instead, I have highlighted the tensions between the notional magic bullet and a more comprehensive approach that linked health to broader questions (as highlighted in the BCG controversy in India, the Philippines, and the nationalist framing of TB in Indonesia, added in the revised version). Also, the notion of fractured sovereignties offers an invaluable insight to knit together the history of TB in disparate international contexts.

Competing Interests: Nil